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Volume 2. Appendices

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EVALUATION OF ACTIVATED CARBON FOR ENHANCED COD REMOVAL FROM PHARMACEUTICAL WASTEWATER

VOLUME II. APPENDICES

by

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16. ABSTRACT

From September to December, 1984 pharmaceutical plant wastewater containing high concentrations of total chemical oxygen demand (TCOD) in the raw waste and treated effluent was treated in trailer mounted pilot plants. The biological treatment train used to treat raw wastewater consisted of three activated sludge systems operated in parallel. Powdered activated carbon (PAC) was added to two of the units in selected dosages. The third unit was used as a control. The physical-chemical treatment train studied in the treatment of pharmaceutical plant effluent consisted of chemical coagulation with alum and anionic polymer; pH adjustment with caustic (when needed); clarification; multi-media filtration and granular activated carbon (GAC) adsorption.

The PAC enhanced biological treatment train as operated during the test period reduced influent TCOD concentration to well below the plant best practicable control technology currently available (BPT) TCOD level. PAC also improved the settling rate of the mixed liquor suspended solids when compared to the control. A viscous floating mass of mixed liquor solids (VFMLS) developed in the PAC units and resulted in premature termination of the study. The VFMLS did not appear in the control. The GAC physical-chemical treatment train was also capable of reducing pharmaceutical plant effluent TCOD levels to below the average BPT level.

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Pollution	Filtration	Pollution Control	
Wastewater	Activated Sludge	Stationary Sources	
Pharmaceutical	Activated Carbon	Biological Oxidation	
Chemical Oxygen Demand	Organic Compounds	Physical-Chemical Treatment	
Clarification	Powdered Carbon		

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FOREWORD

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air and water systems. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. The Clean Water Act, the Safe Drinking Water Act and the Toxic Substances Control Act are three of the major congressional laws that provide the framework for restoring and maintaining the integrity of our Nation's water, for preserving and enhancing the water we drink and for protecting the environment from toxic substances. These laws direct the EPA to perform research to define our environmental problems, measure the impacts and search for solutions.

The Water Engineering Research Laboratory is that component of EPA's Research and Development program concerned with preventing, treating and managing municipal and industrial wastewater discharges; establishing practices to control and remove contaminants from drinking water and to prevent its deterioration during storage and distribution; and assessing the nature and controllability of releases of toxic substances to the air, water and land from manufacturing processes and subsequent product uses. This publication is one of the products of that research and provides a vital communication link between the research and the user community.

This report details the results of an in-depth pilot plant study to evaluate enhanced chemical oxygen demand removal from pharmaceutical wastewater by the use of activated carbon. Both physical-chemical and biological treatment technologies were studied. Volume I discusses the project and analyzes, interprets and summarizes the results. Volume II contains the appendices which includes all of the data and additional supporting information.

Francis T. Mayo, Director
Water Engineering Research Laboratory

ABSTRACT

In November, 1982 the EPA proposed effluent limitations and standards (EPA 440/1-82/084) for the pharmaceutical manufacturing point source category. Some of the proposed regulations limited the discharge of the nonconventional pollutant, total chemical oxygen demand, (TCOD), from existing and new source fermentation (A) and chemical synthesis (C) pharmaceutical manufacturing facilities. However, due to a lack of information on applicable TCOD removal technologies, limitations and standards for TCOD were not promulgated along with the other regulations for A and C Plants on October 27, 1983.

In April, 1984, EPA decided to conduct pilot scale performance evaluations of activated carbon treatment technologies utilizing actual pharmaceutical wastewaters. The purpose of these studies was to help evaluate the ability of these technologies to consistently achieve reductions in the effluent TCOD of pharmaceutical wastewater from fermentation and chemical synthesis wastewaters.

Technologies that were selected for evaluation included:

(1) powdered activated carbon (PAC) addition to an activated sludge system (PACT ®); and

(2) granular activated carbon treatment of pharmaceutical plant secondary effluent.

From September to December, 1984 pharmaceutical plant wastewater containing high concentrations of TCOD in the raw waste and treated effluent was treated in trailer mounted pilot plants. The biological treatment train consisted of three activated sludge systems operated in parallel. Powdered activated carbon was added to two of the units in selected dosages. The third unit was used as a control. The physical-chemical treatment train consisted of chemical coagulation with alum and anionic polymer; pH adjustment with caustic (when needed); clarification; multi-media filtration and granular activated carbon (GAC) adsorption.

The PAC enhanced biological treatment train as operated during the test period reduced influent TCOD concentration to well below the plant best practicable control technology currently available (BPT) TCOD level. PAC also improved the settling rate of the mixed liquor suspended solids when compared to the control unit. A viscous floating mass of mixed liquor solids (VFMLS) developed in the PAC units near the end of Phase IV of the study and resulted in premature termination of the study. The VFMLS did not appear in the control. The GAC physical-chemical treatment train was also capable of reducing pharmaceutical plant effluent TCOD levels to below the average BPT level.

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LIST OF ABBREVIATIONS AND CONVERSIONS

ABBREVIATIONS

ACA -- activated carbon adsorption
BAT -- best available technology economically achievable
BPT -- best practicable control technology currently available
BTS-1 -- Biological Treatment System - 1
BTS-2 -- Biological Treatment System - 2
BTS-3 -- Biological Treatment System - 3
°C -- degrees Centigrade
Cl -- chlorides
CLASS -- chemical laboratory analysis scheduling system
cm -- centimeter
DMACT -- Dynamic Minicolumn Adsorption Technique
DO -- dissolved oxygen
EBCT -- empty bed contact time
ESE -- Environmental Science and Engineering
ft -- foot (feet)
F/M -- food to micro-organism ratio
g -- gram
GC -- gas chromatography
GC/FID -- gas chromatography/flame ionization detection
GC/FTIR -- gas chromatography/Fourier transform infrared
GC/MS -- gas chromatography/mass spectrometry
GAC -- granular activated carbon
gal -- gallon
gpm -- gallons per minute
HP -- horsepower
HPLC/MS -- high pressure liquid chromatography/mass spectrometry

HRT -- hydraulic retention time
in -- inch
kg -- kilograms
KW -- kilowatt
l -- liter
lb -- pound
m -- meter
m/e -- ratio of mass to charge
mg -- milligram
mgd -- million gallons per day
mg/l -- milligrams per liter
min -- minute
ml -- milliliter
ML -- mixed liquor
MLSS -- mixed liquor suspended solids
MLVSS -- mixed liquor volatile suspended solids
MWTS #1 -- Mobile Wastewater Treatment System # 1
MWTS #3 -- Mobile Wastewater Treatment System # 3
n -- number of observations
NH_3 -- ammonia
NIBOD -- nitrogen inhibited biochemical oxygen demand
NISBOD -- nitrogen inhibited soluble biochemical oxygen demand
NO_2 -- nitrite
NO_3 -- nitrate
NSPS -- new source performance standards
PAC -- powdered activated carbon
P727 -- Percol 727 polymer
P728 -- Percol 728 polymer
P757 -- Percol 757 polymer
P763 -- Percol 763 polymer
POI -- point of interface
psi -- pounds per square inch
psig -- pounds per square inch gauge
QA -- quality assurance

QC -- quality control

RAS -- return activated sludge

RS -- return sludge

RPM -- revolutions per minute

SBOD -- soluble biochemical oxygen demand

SCOD -- soluble chemical oxygen demand

sec -- second

SRT -- solids retention time

STOC -- soluble total organic carbon

SVI -- sludge volume index

TBOD -- total biochemical oxygen demand

TCOD -- total chemical oxygen demand

TKN -- total Kjeldahl nitrogen

TOC -- total organic carbon

TP -- total phosphate

TSS -- total suspended solids

ul -- microliter

VFMLS -- viscous floating mixed liquor solids

VSS -- volatile suspended solids

CONVERSIONS

$^\circ F = 1.8^\circ C + 32$

ft x 30.48 = cm

gal x 3.785 = l

gal x 3.785×10^{-3} = m^3

gpd/ft^2 x 0.04 = m^3/day-m^2

gpm x 3.785 = l/min

gpm/ft^2 x 40.74 = l/min-m^2

HP x 7.5 = KW

in x 2.54 = cm

lb x 0.454 = kg

psi x 703.1 = kg/m^2

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APPENDIX A

PROJECT BACKGROUND INFORMATION

DESCRIPTION OF PILOT BIOLOGICAL TREATMENT SYSTEMS (EPA MWTS #3)

Equipment Description

MWTS # 3 contains two similar Biological Treatment Systems. In each system influent wastewater is pumped to an aeration tank where the bio-mass thrives on pollutants in the wastewater. A blower mixes and aerates the wastewater in the aeration tank. The aerated water then flows to the clarifier where bacteria and solids settle as sludge. Some of this sludge is recycled and some is wasted.

Chemicals are pumped directly into the aeration tank. Two chemical stock tanks are provided for bulk chemicals.

Equipment specifications are as follows:

Feed pump: self priming, 7.6 liters/min @ 21,100 kg/m^2 (2 gpm @ 30 psi)

Recycle pump: self priming, 18.9 liters/min @ 21,100 kg/m^2 (5 gpm @ 30 psi)

Chemical pump: 0-30.3 liters/hr (0-8 gph) (each head)

Aeration tank volume BTS-1: 5942 liters (1570 gal)
BTS-2: 5560 liters (1470 gal)

Clarifier: 1.3 meter (4'-3") diameter, volume 2840 liters (750 gal)

Blower: 0.85 m^3/min @ 3520 kg/m^2 (30 scfm @ 5 psi) (factory ratio)
1.7 m^3/min @ 3520 kg/m^2 (60 scfm @ 5 psi) (special pulleys)

The instrumentation on this system indicates flow. Recycle flow is also indicated. Air flow is indicated with pressure and temperature indication for actual flow correction. Sludge is wasted by opening a motorized valve with timer control.

The power required is 460 volt, 3 phase, 60 HZ, 9 amps normal.

Temperature Control System

In this system influent water is pumped through the tubes of a heat exchanger to be warmed by effluent water from the process passing through the heat exchanger shell. If the influent is not heated to the desired temperature, an electric water heater is automatically switched on to provide additional heat. Overly warm influent can be cooled by running cold tap water through the shell instead of warm effluent.

The following information describes the performance of the temperature control system:

Flow, influent	18.9 liters/min (5 gpm) through tubes
Flow, effluent	18.9 liters/min (5 gpm) through shell
Temperature rise through system	-4°C (25°F) through exchanger -4°C (25°F) through heater
City water flow to cool -1°C (30°F)	18.9 liters/min @ 10°C (5 gpm @ 50°F)

Utilities

The normal electric load of MWTS # 3 is about 15 amps @ 460 volts. When all accessories are on, the load is 71 amps. A 30.5m (100 ft) long 4 conductor cable with plug is furnished to connect to the power supply. A 100 amp fused disconnect is furnished for protection of the power supply. Water is required in the trailer for the sink, safety shower and chemical dilution. Only 757 liters (200 gal) per day are consumed but a flow of 57 liters/min @ 28,100 kg/m^2 (15 GPM @ 40 psi) is required to satisfy the periodic demands.

DESCRIPTION OF THE PILOT PHYSICAL/CHEMICAL TREATMENT SYSTEM (EPA MWTS #1)

Clarifier Description

45.4 liters/min (12 gpm) maximum capacity

1.8m (6 ft) diameter by 1.1m (3.5ft) deep, 2720 l (720 gal) clarifier tank

Rapid Mix Tanks: 1-1360 l (360 gal)
2-227 l (60 gal)
1-45.4 l (12 gal)

Flocculation volume, 227 liter (60 gal)
Flocculator--variable speed turbine, 0-180 "G"s

Instrumentation:
pH, indicate, record, control (2 systems)
ORP, indicate, record, control (1 system)
flow, measure, record, totalize

Pumps:
45.4 l/min (12 gpm) self priming feed pump
0-94.6 l/min 0-25 gpm air driven sludge pump

Sludge waste system, timer controlled

Chemical Addition System

Pumps, (6) with 31.8 l/hr (8.4 gal/hr) capacity, any fluid

Tanks, (3) 378 l (100 gal), 606 l (160 gal)

Lime pump, 0-94.6 l/min (0-25 gpm) air driven

Valves, (3) solenoid valves to increase number of chemical injection possibilities

Control: The chemical pumps are controlled by pH, ORP, or set to operate continuously as long as there is wastewater flow.

Electric power: 14 amps, @ 460 volts for the clarifier and chemical skids.

Multi-Media Filter

This system has fully automatic backwashing which can be initiated manually, by timer, or by head loss. Air scour during backwash is a special feature. Other specifications follow.

Capacity, 37.9 l, 38,700 kg/m^2 (10 gpm, 55 psi) filter pressure

Backwash rate, 57 l/min (15 gpm)
Filter bed, $0.09m^2$ ($1 ft^2$) by 0.91 meters (36 in) maximum depth

Instrumentation:
Backwash flowmeter
Influent flowmeter, indicates, records, totalizes

Power required: 9.3 amps @ 460 volts

Carbon Adsorption

The carbon columns are manually backwashed, with provision for air scour if desired. The description is as follows.

Capacity, 18.9 l/min (5 gpm)
Backwash rate, 37.9 l/min (10 gpm)
Columns, four, each with 0.09m^2 (1 ft^2) area by 1.5m (5 ft) bed depth
Instrumentation;

Backwash flow indicate
Influent flow indicate, record, totalize
Air scour, 0.14m^3/min @ 42,200 kg/m^2 (5 SCFM @ 60 psi), if used
Carbon granular size, 8 x 30 mesh
Power, 4.2 amps @ 460 volts

Utilities

The normal electric load is about 30 amps @ 460 volts. When all accessories are on, the load is 80 amps. A 30.5m (100 ft) long 4 conductor cable with plug is furnished to connect to the power supply. A 100 amp fused disconnect is furnished for protection of the power supply.

Water is required in the trailer for the sink, safety shower and chemical dilution. Only 757 l (200 gal) per day are consumed but a flow of 57 liters/min @ 28,100 kg/m^2 (15 gpm @ 40 psi) is required to satisfy the periodic demands.

TABLE A-1. ANALYTICAL DATA SUMMARY - SAMPLE POINT (B)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410699	09/07/1984	1300	628	3400			7770		2100		1350	25.5	190		
410699	09/07/1984	1300	623	3400			7770		2100		1350	25.5	190		
410698	09/08/1984	640	530				6130		1740		1340	36.9	380		
410601	09/09/1984	559	420	3500			7450		1870		1550	48	450		
410602	09/10/1984	820	630				8720		2250		1700	53	450		
410603	09/11/1984	630	454	2700			7990		2100		1500	43.5	390		
410600	09/11/1984	593	426	2700			7940		2160		1480	44.1	380		
410604	09/12/1984	470	325				7530		1900		1500	31	350		
410605	09/13/1984	695	535	2500			7240		1960		1200	43.5	400		
410606	09/14/1984	760	630				8190				1100				
410607	09/15/1984	325	235				8390		2200		1300	45.6	350		
411001	09/16/1984	500	340				8870		1710		1500				
411002	09/17/1984	555	350	2000			5770				1340				
411003	09/18/1984	465	405				5350								
411004	09/19/1984	655		3000			7700		2130						
411005	09/20/1984	840	580				7720								
411006	09/21/1984	650					6710								
411007	09/22/1984	670					7180								
411008	09/23/1984	1020	745				7180		1890						
411009	09/24/1984	1050					7500				1450				
411010	09/25/1984	590					6750		1950						
411011	09/26/1984	1320					9840								
411012	09/27/1984	840	440	2900			7250		2190		1130				
411013	09/28/1984	447					7140								
411014	09/29/1984	587	440				7010		2380						
411015	09/30/1984	650					5640								

(continued)

TABLE A-1. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411016	10/01/1984	340	220				4790		1230		1450				
411000	10/01/1984	380	260				4920		1540		1430				
411017	10/02/1984	590					6580								
411018	10/03/1984	1060	800	2300			6660				1630				
411019	10/04/1984	440					7660								
411020	10/05/1984	630					8720								
411021	10/06/1984	630													
411022	10/07/1984	720	440	4100			8910		2280		1550				
411023	10/08/1984	560					6330								
411024	10/09/1984	890	670				7550		2370		1400				
411401	10/10/1984	500	400	3200				2380		1450					
411400	10/10/1984	500	400	2900						1450					
411402	10/11/1984	1000	720				6200		1740						
411403	10/12/1984	770	540	1900			6830		1590		1100				
411404	10/13/1984	560	410				9540		1980						
411405	10/14/1984	625	435					2280							
411406	10/15/1984	1180	720	3900				2610							
411407	10/16/1984	590	400					2150		1180					
411408	10/17/1984	790	440	2200			8440		1810		1230				
411409	10/18/1984	760	540				6890		1550						
411410	10/19/1984	620	530				6890		1730						
411411	10/20/1984	950	640	2500			6740		1720		1400				
411412	10/21/1984	740	540				7030		1880						
411413	10/22/1984	370	280				5520		1560						
411414	10/23/1984	467	240				5510		1590		1000				

(continued)

TABLE A-1. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411901	10/24/1984	550					8280								
411902	10/25/1984	750	590	2500			6850		2140		1110				
411903	10/26/1984	660					4060								
411904	10/27/1984	510					8890								
411905	10/28/1984	333	327				7030		1850		1380				
411906	10/29/1984	580					6070								
411907	10/30/1984	460	353	2100			5640		1550		1120				
411908	10/31/1984	630					6170								
411909	11/01/1984	760	380				2500		1320						
411910	11/02/1984	390					2260								
411911	11/03/1984	610	520				3980		1310						
411912	11/04/1984	710	560				4550		2830						
411913	11/05/1984	330	170	2800			3320		1520		982				
411914	11/06/1984	480					4680								
411915	11/07/1984	390					6840								
411916	11/08/1984	1300					6780								
411917	11/09/1984	520	380	3000			7140		1900		1450				
411918	11/10/1984	450					8910								
411919	11/11/1984	500	400	2900			7120		1890		1470				
411920	11/12/1984	470					5800								
411921	11/13/1984	590	510				9290								
411922	11/14/1984	920					7730								
411923	11/15/1984	390	320				5700				1280		300	250	3.18
411924	11/16/1984	300					6450								
411925	11/17/1984	600	430				7880								

(continued)

TABLE A-1. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411926	11/18/1984	353					6870								
411927	11/19/1984	200	140	1700			4560				1120		130	65	1.78
411928	11/20/1984	350					7830								
411929	11/21/1984	580					7260								
411930	11/22/1984	680					6660								
411931	11/23/1984	790	530				5280				437				
411932	11/24/1984	350					4950								
412301	11/25/1984	1140	530	2300			5980				675		380	92	3.4
412302	11/26/1984	520	380				7550								
412303	11/27/1984	580	350	3500			7990				1280		410	80	3.55
412304	11/28/1984	520	370								339		180	51	2.83

* Raw Waste Influent

TABLE A-2. ANALYTICAL DATA SUMMARY - SAMPLE POINT (F1)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410801	09/09/1984	58	43		52	9.8	818	687	235						
410802	09/10/1984	69	67				922	715							
410803	09/11/1984	80	62		30.4	7.4	894	751	329						
410897	09/12/1984	64	50				922	776		221					
410804	09/12/1984	74	59				916	800		228					
410805	09/13/1984	59	50		19.8		916	833	255						
410806	09/14/1984	88	74				872	782							
410807	09/15/1984	56	48				891	715							
411201	09/16/1984	63	50				926	755		210					
411202	09/17/1984	66	50		17.4	4.4	919	777	276						
411203	09/18/1984	104	98				863	683							
411204	09/19/1984	180			16.8	5.7	785	596	234	145					
411205	09/20/1984	298	260				1080	634							
411206	09/21/1984	124					707	578							
411207	09/22/1984	89					712	578							
411208	09/23/1984	124	110				727	554	189	145					
411209	09/24/1984	900					1750	604							
411210	09/25/1984	1220					2230	599	474	162					
411211	09/26/1984	900					1770	591							
411212	09/27/1984	420	240		31	8.3	1060	528	390						
411213	09/28/1984	78					684	578							
411214	09/29/1984	90	61				656	523	160	136					
411215	09/30/1984	64					604	497							
411216	10/01/1984	53	42						158	144					
411217	10/02/1984	51					586	551							
411218	10/03/1984	32	27		9.2	4.2	546	449	138	99.3					

(continued)

TABLE A-2. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411219	10/04/1984	29													
411200	10/04/1984	29													
411220	10/05/1984	34					538	468							
411221	10/07/1984	27					554	497							
411222	10/07/1984	62	51		15	8	818	659	177	131					
411223	10/08/1984	77					634								
411224	10/09/1984	102	90				707	554	155	117					
411701	10/10/1984	64	50		13.1	4	562	476	169	131					
411702	10/11/1984	47	41				570	479	146	132					
411703	10/12/1984	48	41		7.8	3	578	424	171	137					
411704	10/13/1984	110	86				583	476	133	106					
411705	10/14/1984	70	58				504	431	139	119					
411706	10/15/1984	68	50		16.3	3.6	578	476	144	104					
411700	10/15/1984	60	48		16.9	3.6	632	469	154	131					
411707	10/16/1984	154	76				580	492	174	121					
411708	10/17/1984	61	48		33	17	679	497	151	129					
411709	10/18/1984	56	49				570	476	195	113					
411710	10/19/1984	67	54				572	444	138	111					
411711	10/20/1984	59	49		9.7	3.8	551	449	141	112					
411712	10/21/1984	71	56				578	451	186	112					
411713	10/22/1984	96	64				599	436	152	131					
411714	10/23/1984	222	122		15	3	659	419	171	129					
412101	10/24/1984	210					718	402							
412102	10/25/1984	393	327		36	4	932	461							
412103	10/26/1984	140					690	400							

(continued)

TABLE A-2. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412104	10/27/1984	39					422	375							
412105	10/28/1984	39	36				446	397							
412106	10/29/1984	25					402	281							
412107	10/30/1984	48	40		7.6	4.5	414	354	125	114					
412108	10/31/1984	66					436	375							
412109	11/01/1984	90	47				474	351	127	114					
412111	11/03/1984	153	117				497	263	128	96					
412112	11/04/1984	98	80				575	378	142	107					
412113	11/05/1984	90	60		28.8	5.1	564	412	130	122					
412115	11/07/1984	50					446	305							
412117	11/09/1984	54	50				451	328	118	97					
412118	11/10/1984	73					464	309							
412119	11/11/1984	150	150		21.3	7.3	586	340	112	79.3					
412120	11/12/1984	296					681	366							
412121	11/13/1984	710	580				1390	441							
412122	11/14/1984	2270					3880	449							
412123	11/15/1984	880	750				3470	538					39	3.4	72.8
412124	11/16/1984	570					1180	368							
412125	11/17/1984	515	375				957	326							
412126	11/18/1984	556					1410	321							
412127	11/19/1984	540	390		51	7.8	950	256					33	3.9	28.6
412128	11/20/1984	740					1480	347							
412129	11/21/1984	1310					2310	422							
412130	11/22/1984	3400					5930	402							
412191	11/23/1984	103	90				482	333							

(continued)

TABLE A-2. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412194	11/24/1984	85					400	326							
412501	11/25/1984	88	68				368	305						7.8	37.6
412502	11/26/1984	80	66				400	321							
412504	11/28/1984	93	70		13	8.3	451	347					31	8.3	47.6

* BTS-1 Clarifier Effluent

TABLE A-3. ANALYTICAL DATA SUMMARY - SAMPLE POINT (F2)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410811	09/09/1984	72	57		54	16.8	857	695		210					
410812	09/10/1984	74	69				900	718							
410813	09/11/1984	116	97		30	7.6	980	750		229					
410898	09/12/1984	136	118				1060	833							
410814	09/12/1984	144	118				1060	854	299	237					
410815	09/13/1984	146	122		25.2	9.3	1050	851	309	222					
410816	09/14/1984	162	138				990	797							
410817	09/15/1984	124	100				1000	721							
411231	09/16/1984	132	108				1070	777							
411232	09/17/1984	140	108		25.2	6.65	1010	781	260	200					
411233	09/18/1984	180	144				996	734							
411234	09/19/1984	410			27.6	5.4	879	507	164	110					
411235	09/20/1984	300	266				922	469							
411236	09/21/1984	286					797	390							
411237	09/22/1984	236					764	397							
411238	09/23/1984	260	236				756	356		91.3					
411239	09/24/1984	382					967	361							
411240	09/25/1984	620					1230	299	130	75.6					
411241	09/26/1984	480					1020	321							
411242	09/27/1984	250	198		25	4.5	640	247		69.2					
411243	09/28/1984	143					541	302							
411244	09/29/1984	234	142				551	328	107	67.3					
411245	09/30/1984	132					523	305							
411246	10/01/1984	85	59				541	351	109	68.2					
411247	10/02/1984	48					422	328							
411248	10/03/1984	50	42		5.2	4.1	351	286	93.7	83.4					

(continued)

TABLE A-3. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411249	10/04/1984	55					543	356							
411250	10/05/1984	26					316	247							
411230	10/05/1984	30					316	247							
411251	10/06/1984	53					419	337							
411252	10/07/1984	31	23		7	4.9	632	520	137	99.7					
411253	10/08/1984	72					419								
411254	10/09/1984	154	136				562	344	100	82.9					
411721	10/10/1984	330	260		18.4	3	549	347	139	69					
411722	10/11/1984	306	278				750	330	110	77.4					
411723	10/12/1984	64	54		7.6	3	356	216	96.7	73.2					
411724	10/13/1984	210	196				570	261	151	85.9					
411725	10/14/1984	188	154				538	218	106	62					
411726	10/15/1984	138	118		13.7	3.9	482	218	108	69.3					
411727	10/16/1984	157	117				497	265	117	60.2					
411720	10/16/1984	163	120				502	281	89.3	76.7					
411728	10/17/1984	80	54		21	15	538	321	102	71.9					
411729	10/18/1984	198	168				543	261	96	62.4					
411730	10/19/1984	203	183				580	236	109	78					
411731	10/20/1984	175	149		21	5.2	530	232	112	71.9					
411732	10/21/1984	200	162				507	265	104	76.9					
411733	10/22/1984	144	126				474	293	98.5	64.7					
411734	10/23/1984	260	188		9.6	2	528	236	100	56					
412131	10/24/1984	103					361	203							
412132	10/25/1984	224	192		20.4	2	538	247		82.4					
412133	10/26/1984	70					375	216							

(continued)

TABLE A-3. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412134	10/27/1984	53													
412135	10/28/1984	66	60				380	279	100	88.3					
412136	10/29/1984	37					302	138							
412137	10/30/1984	90	78		9.6	2	309	179		64.1					
412138	10/31/1984	54					214	179							
412139	11/01/1984	43	17					181		44.7					
412140	11/02/1984	68					232	127							
412141	11/03/1984	43	33				223	106		41.4					
412142	11/04/1984	112	92				371	234	56.8	39					
412143	11/05/1984	73	73		19.2	7.8	286	234	62.5	53.6					
412144	11/06/1984	57					451	216							
412145	11/07/1984	39					238	153							
412146	11/08/1984	30					241	207							
412147	11/09/1984	43	28				318	229							
412148	11/10/1984	22					259	234							
412149	11/11/1984	33	30		4.2	3.6	288	212							
412150	11/12/1984	34						201							
412151	11/13/1984	28	20				247	216							
412152	11/14/1984	26					326	225							
412153	11/16/1984	73	67										11	2.3	111
412154	11/16/1984	164					436	241							
412155	11/17/1984	220	120				419	179							
412156	11/18/1984	122					330	209							
412157	11/19/1984	53	33		12.2	3.1	225	153					7.3	1.3	70
412158	11/20/1984	46					259	190							

(continued)

TABLE A-3. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412159	11/21/1984	41													
412160	11/22/1984	25													
412192	11/23/1984	22	18				170	151							
412195	11/24/1984	26					170	157							
412521	11/25/1984	53	46		8.7	4.3	225	157						2.3	102
412522	11/26/1984	69	56				256	190							
412524	11/28/1984	110	80		14	7.7	347	205					20	1.4	92

* BTS-2 Clarifier Effluent

TABLE A-4. ANALYTICAL DATA SUMMARY - SAMPLE POINT (F3)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410821	09/09/1984	88	80		80	23.4	833	687	244						
410822	09/10/1984	150	138				1290	961	370						
410823	09/11/1984	114	102		84	36	983	773	325	232					
410899	09/12/1984	174	140				1220	900							
410824	09/12/1984	160	136				1210	926		283					
410825	09/13/1984	126	116		44.4	9.2	1100	913	340	261					
410826	09/14/1984	99	96				1020	882							
410827	09/15/1984	560	410				1540	776							
411261	09/16/1984	580	440				1640	877							
411262	09/17/1984	570	430		125	28	1660	891	443	259					
411263	09/18/1984	1420	1250				2590	842							
411264	09/19/1984	1460			252	14.5	2450	860	329	258					
411265	09/20/1984	91	76				1060	957							
411266	09/21/1984	56					929	863							
411267	09/22/1984	56					1070	961							
411268	09/23/1984	87	80				1140	941		264					
411269	09/24/1984	84					1200	998							
411270	09/25/1984	98					1260	976	348	250					
411271	09/26/1984	108					1270	1010							
411272	09/27/1984	145	130		31	23	1300	1020	346	272					
411273	09/28/1984	123					1270	1060							
411274	09/29/1984	130	102				1300	1110	360	298					
411275	09/30/1984	83					1140	957							
411276	10/01/1984	38	35						296	267					
411277	10/02/1984	100					1100	1010							
411278	10/03/1984	430	330		67.2	16.5	1360	1060	297	227					

(continued)

TABLE A-4. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411279	10/04/1984	108					1000	888							
411280	10/05/1984	75													
411260	10/05/1984	86													
411281	10/06/1984							875							
411282	10/07/1984	89	59		41.8	27.3	1260	926	334	247					
411283	10/08/1984	69					1070								
411284	10/09/1984	72	67				1060	824	287	237					
411741	10/10/1984	120	97		26.7	5.5	983	929	265	226					
411742	10/11/1984	148	128				1130	866	284	223					
411743	10/12/1984	232	192		37.5	8	1190	812	272	236					
411744	10/13/1984	273	227				1160	803	309	194					
411745	10/14/1984	180	140				1060	732	267	211					
411746	10/15/1984	89	63		25.5	8.5	1090	919	270	236					
411747	10/16/1984	90	55				1030	910	284	218					
411748	10/17/1984	123	77		33	14.5	1130	869	291	221					
411740	10/17/1984	143	71		32.3	17.4	1190	854	338	269					
411749	10/18/1984	132	115				1180	863	310	223					
411750	10/19/1984	146	117				1060	773	285	221					
411751	10/20/1984	112	88		19.5	4.7	1020	797	363	253					
411752	10/21/1984	104	74				1120	851	282	224					
411753	10/22/1984	100	80				932	744	273	211					
411754	10/23/1984	148	75		15.7	6	894	684	287	197					
412161	10/24/1984	118					843	681							
412162	10/25/1984	98	78		16	9	863	738							
412163	10/26/1984	42					812	718							

(continued)

TABLE A-4. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412164	10/27/1984	57					751	694							
412165	10/28/1984	52	51				869	759	258	241					
412166	10/29/1984	128					833	604							
412167	10/30/1984	70	48		12.5	9	869	687	257	232					
412168	10/31/1984	85					803	747							
412169	11/01/1984	92	44				803	715	247	230					
412170	11/02/1984	100					800	613							
412171	11/03/1984	77	53				769	599	229	198					
412172	11/04/1984	64	46				800	712	227	206					
412173	11/05/1984	75	40		21.1	6.8	806	753	264	236					
412174	11/06/1984	65					980	721							
412175	11/07/1984	50					894	645							
412176	11/08/1984	55					712	659							
412177	11/09/1984	50	46				721	684		192					
412178	11/10/1984	23					753	690							
412179	11/11/1984	68	50		9.6	5.9	803	684	220	199					
412180	11/12/1984	104					744	656							
412181	11/13/1984	100	78				860	681							
412182	11/14/1984	120					1010	727							
412183	11/15/1984	137	104				769	659					28	7.4	189
412184	11/16/1984	128					776	693							
412185	11/17/1984	145	95				794	618							
412186	11/18/1984	100					693	626							
412187	11/19/1984	70	56		15.2	3.5	634	492					25	1.1	174
412188	11/20/1984	70					659	530							

(continued)

TABLE A-4. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412189	11/21/1984	63					578	538							
412190	11/22/1984	190					727	604							
412193	11/23/1984	75	58				632	541							
412196	11/24/1984	93					648	507							
412541	11/25/1984	164	142		26.7	8.9	710	549						3.8	163
412542	11/26/1984	590	485				1300	738							
412543	11/27/1984	253	198		26	15.1	785	515					76	9.9	145
412544	11/28/1984	128	93		17	12	712	632					46	4.4	137

* BTS-3 Clarifier Effluent

TABLE A-5. ANALYTICAL DATA SUMMARY - SAMPLE POINT (G1)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410778	09/08/1984	3810													
410701	09/09/1984	4520													
410702	09/10/1984	4320													
410703	09/11/1984	4860													
410704	09/12/1984	4680													
410705	09/13/1984	4470													
410706	09/14/1984	4440													
410707	09/15/1984	4460													
411101	09/16/1984	4770													
411197	09/16/1984	4740													
411102	09/17/1984	4570													
411103	09/18/1984	4970													
411104	09/19/1984	5300													
411105	09/20/1984	5200													
411106	09/21/1984	5580													
411107	09/22/1984	5200													
411108	09/23/1984	4120													
411109	09/24/1984	3460													
411110	09/25/1984	4080													
411111	09/26/1984	4640													
411112	09/27/1984	4860													
411113	09/28/1984	5540													
411114	09/29/1984	5660													
411115	09/30/1984	5820													
411117	10/02/1984	5600													
411118	10/03/1984	6060													

(continued)

TABLE A-5. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411119	10/04/1984	5640													
411120	10/05/1984	6580													
411121	10/07/1984	5440													
411122	10/08/1984	5720													
411123	10/08/1984	5960													
411124	10/09/1984	5720													
411184	10/09/1984	5160	4500												
411501	10/10/1984	5560													
411502	10/11/1984	5400													
411503	10/12/1984	5460													
411500	10/12/1984	5240													
411504	10/13/1984	5580													
411505	10/14/1984	5780													
411506	10/16/1984	6480													
411507	10/16/1984	6700													
411508	10/17/1984	5590													
411509	10/18/1984	7000													
411510	10/19/1984	5790													
411511	10/20/1984	5800													
411512	10/21/1984	5650													
411513	10/22/1984	5500													
411514	10/23/1984	5760													
412001	10/24/1984	5280													
412002	10/25/1984	5480													
412003	10/26/1984	5700													

(continued)

TABLE A-5. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412004	10/27/1984	6120													
412005	10/28/1984	6580													
412006	10/29/1984	6300													
412007	10/30/1984	6460													
412008	10/31/1984	6340													
412009	11/01/1984	6360													
412010	11/02/1984	6280													
412011	11/03/1984	6100													
412012	11/04/1984	6860													
412013	11/05/1984	6860													
412014	11/06/1984	6760													
412015	11/07/1984	6340													
412016	11/08/1984	7480													
412017	11/09/1984	7020													
412018	11/10/1984	5440													
412019	11/11/1984	6920													
412020	11/12/1984	6160													
412021	11/13/1984	5820													
412022	11/14/1984	5540													
412023	11/16/1984	4970													
412024	11/17/1984	4110													
412025	11/18/1984	6200													
412026	11/19/1984	4810													
412027	11/20/1984	4280													
412028	11/21/1984	4110													

(continued)

TABLE A-5. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412029	11/22/1984	4370													
412030	11/23/1984	3890													
412091	11/24/1984	3200													
412094	11/25/1984	2080													
412401	11/26/1984	2140	1870												
412402	11/27/1984	3280													
412404	11/28/1984	3840													

* BTS-1 Waste Mixed Liquor

TABLE A-6. ANALYTICAL DATA SUMMARY - SAMPLE POINT (G-2)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410788	09/08/1984	3860													
410711	09/09/1984	4480													
410712	09/10/1984	4680													
410713	09/11/1984	5040													
410714	09/12/1984	4720													
410715	09/13/1984	4460													
410716	09/14/1984	4480													
410799	09/15/1984	4160													
410717	09/15/1984	4140													
411131	09/16/1984	3760													
411132	09/17/1984	3860													
411133	09/18/1984	4500													
411134	09/19/1984	5460													
411135	09/20/1984	6100													
411136	09/21/1984	6420													
411137	09/22/1984	6600													
411138	09/23/1984	6980													
411139	09/24/1984	7070													
411140	09/25/1984	7220													
411141	09/26/1984	7360													
411142	09/27/1984	7600													
411143	09/28/1984	7700													
411144	09/29/1984	6480													
411145	09/30/1984	6980													
411147	10/02/1984	6940													
411198	10/02/1984	6840													

(continued)

TABLE A-6. (continued)

SAMPLE	DATE	TSS mg/1	VSS mg/1	TBOD mg/1	NIBOD mg/1	NISBOD mg/1	TCOD mg/1	SCOD mg/1	TOC mg/1	STOC mg/1	Cl mg/1	TP mgP/1	TKN mgN/1	NH4-N mgN/1	NO3+NO2 mgN/1
411148	10/03/1984	7160													
411149	10/04/1984	7140													
411150	10/05/1984	7080													
411151	10/06/1984	7900													
411152	10/08/1984	8160													
411153	10/08/1984	7960													
411154	10/09/1984	7740													
411522	10/11/1984	8010													
411523	10/12/1984	7680													
411520	10/12/1984	7720													
411524	10/13/1984	7780													
411525	10/14/1984	7840													
411526	10/15/1984	8170													
411527	10/16/1984	8300													
411528	10/17/1984	7880													
411529	10/18/1984	8120													
411530	10/19/1984	7740													
411531	10/20/1984	7580													
411532	10/21/1984	7500													
411533	10/22/1984	6700													
411534	10/23/1984	6620													
412031	10/24/1984	7090													
412032	10/25/1984	9640													
412033	10/26/1984	7360													
412034	10/27/1984	8740													

(continued)

TABLE A-6. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412035	10/28/1984	7200													
412037	10/30/1984	8660													
412038	10/31/1984	8820													
412039	11/01/1984	8350													
412040	11/02/1984	8060													
412041	11/03/1984	8060													
412042	11/04/1984	7800													
412043	11/05/1984	7680													
412044	11/06/1984	7040													
412045	11/07/1984	6980													
412046	11/08/1984	7680													
412047	11/09/1984	7950													
412048	11/10/1984	7900													
412049	11/11/1984	8000													
412050	11/13/1984	8340													
412051	11/13/1984	8160													
412052	11/14/1984	8420													
412053	11/15/1984	7970													
412054	11/16/1984	8750													
412055	11/17/1984	8800													
412056	11/18/1984	8760													
412057	11/19/1984	8670													
412058	11/20/1984	8700													
412059	11/21/1984	9280													
412060	11/22/1984	8500													

(continued)

TABLE A-6. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412092	11/23/1984	8460													
412095	11/24/1984	7820													
412421	11/25/1984	7490	6910												
412422	11/26/1984	9870													
412424	11/29/1984	8240													

* BTS-2 Waste Mixed Liquor

TABLE A-7. ANALYTICAL DATA SUMMARY - SAMPLE POINT (G3)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
410798	09/08/1984	3350	3090												
410721	09/09/1984	3620	3100												
410722	09/10/1984	3620	3180												
410723	09/11/1984	3920	3520												
410700	09/11/1984	3980	3520												
410724	09/12/1984	4100	3380												
410725	09/13/1984	4020	3400												
410726	09/14/1984	4060	3680												
410727	09/15/1984	4160	3740												
411161	09/16/1984	4240	3640												
411162	09/17/1984	4070	3510												
411163	09/18/1984	3900	3400												
411164	09/19/1984	4400													
411165	09/20/1984	4820	4180												
411166	09/21/1984	3960													
411167	09/22/1984	3640													
411168	09/23/1984	3340	3060												
411169	09/24/1984	3160													
411170	09/25/1984	3210	2860												
411171	09/26/1984	3300													
411172	09/27/1984	3420	2900												
411173	09/28/1984	3540													
411174	09/29/1984	3980	3500												
411175	09/30/1984	4020													
411176	10/01/1984	3460	3040												
411177	10/02/1984	3200													

(continued)

TABLE A-7. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
411199	10/02/1984	2900													
411178	10/03/1984	2980	2500												
411179	10/04/1984	2780													
411180	10/05/1984	2980													
411181	10/06/1984	5160													
411182	10/07/1984	4800	4100												
411183	10/08/1984	5060													
411542	10/11/1984	5020	4360												
411540	10/11/1984	5020	4440												
411543	10/12/1984	5040	4360												
411544	10/13/1984	4680	4080												
411545	10/14/1984	5280	4160												
411546	10/15/1984	5460	4460												
411547	10/16/1984	6340	5460												
411548	10/17/1984	5140	4190												
411549	10/18/1984	4040	3160												
411550	10/19/1984	4550	3920												
411551	10/20/1984	4320	3820												
411552	10/21/1984	4200	3740												
411553	10/22/1984	4040	3580												
411554	10/23/1984	4220	3340												
412061	10/24/1984	4080													
412062	10/25/1984	3950	3420												
412063	10/26/1984	4020													
412064	10/27/1984	4440													

(continued)

TABLE A-7. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412065	10/28/1984	4660	4180												
412066	10/29/1984	4640													
412067	10/30/1984	4620	3980												
412068	10/31/1984	4580													
412069	11/01/1984	4340	3690												
412070	11/02/1984	4200													
412071	11/04/1984	4440	3800												
412072	11/04/1984	4800													
412073	11/05/1984	4570	3910												
412074	11/06/1984	3040													
412075	11/07/1984	4520													
412076	11/08/1984	4880													
412077	11/09/1984	4840	4190												
412078	11/10/1984	4840													
412079	11/11/1984	4900	4330												
412080	11/12/1984	5000													
412081	11/13/1984	5280	4300												
412082	11/14/1984	5340													
412083	11/15/1984	4540	3800												
412084	11/16/1984	4840													
412085	11/17/1984	4860	4060												
412086	11/18/1984	4960													
412088	11/20/1984	4480													
412089	11/21/1984	4900													
412090	11/22/1984	4980													

(continued)

TABLE A-7. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412093	11/23/1984	4570	3990												
412096	11/24/1984	4140													
412442	11/26/1984	4420	3860												
412443	11/27/1984	4240	3580												
412444	11/28/1984	4700	4080												

* BTS-3 Waste Mixed Liquor

TABLE A-8. ANALYTICAL DATA SUMMARY - SAMPLE POINT (J)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412798	09/08/1984	72					776								
412797	09/09/1984	124		74			926								
412701	09/10/1984	372		160			1320								
412702	09/11/1984	1560					2620								
412703	09/12/1984	690					1800								
412700	09/12/1984	740					1770								
412704	09/13/1984	600					1460								
412705	09/14/1984	980					1940								
412706	09/15/1984	1470					3180								
410597	09/16/1984	160					1040	703							
412707	09/16/1984	1080					2370								
412708	09/17/1984	160		68			999								
412709	09/18/1984	600					1360								
412710	09/19/1984	148		63			891								
412711	09/20/1984	65					809								
412712	09/21/1984	108					794								
412713	09/22/1984	440		70			1040								
412714	09/23/1984	204		61			894								
412715	09/24/1984	164					879								
412716	09/25/1984	122		64			996								
412720	09/29/1984	208		100			1050								
412722	10/01/1984	150		91			857								
412724	10/03/1984	145		63			894								
412727	10/06/1984	235					1200								
412728	10/07/1984	200		110			1270								
412730	10/09/1984	270		71			1230								

(continued)

TABLE A-8. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412731	10/10/1984	260		100			1260	897							
412732	10/11/1984	248					1360	857							
412733	10/12/1984	335		99			1310	770							
412734	10/13/1984	295					1260	787							
412735	10/14/1984	310					1320	764							
412736	10/15/1984	400		200			2160	1020							
412737	10/16/1984	480					1830	1130							
412738	10/17/1984	593		200			1770	1000							
412739	10/18/1984	345						863							
412740	10/19/1984	320						701							
412741	10/20/1984	295		160			1470	773							
436800	10/21/1984	300					1470	869							
436801	10/22/1984	295					1440	959							
436802	10/23/1984	267		120			1300	803							
436803	10/24/1984	285					1280	839							
436804	10/25/1984	320		160			1430	910							
436805	10/26/1984	280					1350	842							
436806	10/27/1984	320					1680	1010							
436807	10/28/1984	555		290			2580	1330							
436808	10/29/1984	580					2510	1110							
436809	10/30/1984	460		220			1660	983							
436810	10/31/1984	427						879							
436811	11/01/1984	273					1250	833							
436812	11/02/1984	235						704							
436813	11/03/1984	133						710							

(continued)

TABLE A-8. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436814	11/04/1984	180						885							
436815	11/05/1984	290		270			1410	1120							
436816	11/06/1984	285						1030							
436817	11/07/1984	275						885							
436818	11/08/1984	360						803							
436819	11/09/1984	300		150			1430	891							
436820	11/10/1984	168						910							
436821	11/11/1984	200		140			1290	851							
436822	11/12/1984	307						827							
436823	11/13/1984	287						922							
436850	11/13/1984	373						961							
436824	11/14/1984	313						922							
436825	11/15/1984	310		160			1620	857							
436826	11/16/1984	295						803							
436827	11/17/1984	280						812							
436828	11/18/1984	245						715							
436829	11/19/1984	175		110			1030	615							
436830	11/20/1984	175						673							
436831	11/21/1984	280						684							
436832	11/22/1984	167						456							
436833	11/23/1984	190		96			741	446							
436834	11/24/1984	178						412							
436835	11/25/1984	130		66				464							
436836	11/26/1984	176		90			730	469							
436837	11/27/1984	213						687							

(continued)

TABLE A-8. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436838	11/28/1984	470		340			1760	957							
436839	11/29/1984	240					773								
436840	11/30/1984	305						659							
436841	12/01/1984	325		360			1220	721							
436842	12/02/1984	320						848							
436843	12/03/1984	340		340			1630	964							
436844	12/04/1984	293		320			1500	996							

* Full-Scale Plant Effluent

TABLE A-9. ANALYTICAL DATA SUMMARY - SAMPLE POINT (K)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412848	09/08/1984	168					879								
412801	09/10/1984	177		73			961	752							
412802	09/11/1984	360					1130	721							
412812	09/21/1984	135		20			659	589							
412813	09/22/1984	214		50			830	618							
412814	09/23/1984	140		22			665	567							
412815	09/24/1984	242					815	599							
412816	09/25/1984	176		33			833	676							
412817	09/26/1984	236		54			851	631							
412818	09/27/1984	960		110			1430	664							
412819	09/28/1984	387		77			973	687							
412820	09/29/1984	313		62			929	631							
412821	09/30/1984	360		60			897	607							
412822	10/01/1984	210		43			730	718							
412850	10/01/1984	230		40			730	721							
412823	10/02/1984	260		46			770	634							
412824	10/03/1984	310		50			851	583							
412825	10/04/1984	230		38			715	602							
412826	10/05/1984	220		38			770	629							
412827	10/06/1984	220		49			957	712							
412828	10/07/1984	170		69			1200	848							
412829	10/08/1984	215		58			1010	794							
412830	10/09/1984	164		32			833	833							
412831	10/10/1984	320		88			1030	665							
412832	10/11/1984	250		89			1090	718							
412833	10/12/1984	115		47			954	803							

(continued)

TABLE A-9. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412835	10/14/1984	195					1190	684							
412836	10/16/1984	245		180			1330	922							
412837	10/17/1984	627		200			1740	1030							
412838	10/17/1984	151		120			1230	854							
412841	10/20/1984	41		51			863	687							
436900	10/21/1984	32		42			863	693							
436901	10/22/1984	34		98			900	791							
436902	10/23/1984	51		26			747	621							
436903	10/24/1984	35		31			707	629							
436904	10/25/1984	137		61			848	738							
436905	10/26/1984	75		68			879	676							
436906	10/27/1984	133		140			1120	842							
436907	10/28/1984	280		260			1760	1050							
436908	10/29/1984	280		270			1990	882							
436909	10/30/1984	184		130			1140	839							
436910	10/31/1984	148		90			993	756							
436911	11/01/1984	120		38			833	659							
436912	11/02/1984	115		33			744	599							
436913	11/03/1984	68		21			687	572							
436914	11/04/1984	56		60			797	747							
436915	11/05/1984	115		150			1060	941							
436916	11/06/1984	230		160			1170	718							
436917	11/07/1984	185		190			1190	753							
436918	11/08/1984	207		110			1050	710							
436919	11/09/1984	285		150			1160	750							

(continued)

TABLE A-9. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436920	11/10/1984	104		69			954	684							
436921	11/11/1984	125		44			879	659							
436922	11/12/1984	205		67			900	747							
436923	11/13/1984	156		96			1020	712							
436924	11/14/1984	123		99			1090	687							
436950	11/14/1984	140		96			1050	707							
436925	11/15/1984	200		65			996	632							
436926	11/16/1984	100					806	732							
436927	11/17/1984	175		60			911	637							
436928	11/18/1984	160		70			833	567							
436929	11/19/1984	83		30			618	502							
436930	11/20/1984	52		24			602	487							
436931	11/21/1984	76		43			604	551							
436932	11/22/1984	114					656	330							
436933	11/23/1984	82		28			441	351							
436934	11/24/1984	81		19			407	351							
436935	11/25/1984	43		18			400	347							
436936	11/26/1984	62		23			436	363							
436937	11/27/1984	86		72			554	494							
436938	11/28/1984	120		270			1060	842							
436939	11/29/1984	98		170			941	670							
436940	11/30/1984	143		110			830	567							
436941	12/01/1984	160		200			756	525							
436942	12/02/1984	186		190			1080	715							
436943	12/03/1984	200		200			1240	794							

(continued)

TABLE A-9. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436944	12/04/1984	240		100			1130	744							

* Multi-Media Filter Influent

TABLE A-10. ANALYTICAL DATA SUMMARY - SAMPLE POINT (L)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412898	09/08/1984	51					759								
412851	09/10/1984	66		57			857	732							
412852	09/11/1984	1400					1070	715							
412862	09/21/1984	58		20			626	587							
412896	09/21/1984	54		20			613	598							
412863	09/22/1984	148		57			779	659							
412864	09/23/1984	61		26			604	588							
412865	09/24/1984	112					701	591							
412866	09/25/1984	110		21			744	679							
412867	09/26/1984	134		42			750	626							
412868	09/27/1984	1180		110			1980	604							
412869	09/28/1984	327		73			958	701							
412870	09/29/1984	210		55			833	599							
412871	09/30/1984	220		50			785	637							
412872	10/01/1984	135		30			712	692							
412723	10/02/1984	130		31			645	645							
412873	10/02/1984	120		32			693	607							
412874	10/03/1984	195		39			779	580							
412875	10/04/1984	142		29			693	629							
412876	10/05/1984	190		38			926	662							
412877	10/06/1984	190		49			990	983							
412878	10/07/1984	270		76			1230	983							
412879	10/08/1984	155		51			961	830							
412880	10/09/1984	127		31			806	607							
412881	10/10/1984	250		81			935	594							
412882	10/11/1984	212		86			1050	747							

(continued)

TABLE A-10. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412883	10/12/1984	139		45			869	662							
412885	10/14/1984	123					1010	673							
412888	10/17/1984	143		120			1290	854							
412891	10/20/1984	33		47			848	715							
437000	10/21/1984	29		35			857	698							
437001	10/22/1984	17		160			985	894							
437002	10/23/1984	24		25			753	626							
437003	10/24/1984	13		32			684	656							
437004	10/25/1984	56		71			851	753							
437005	10/26/1984	54		59			866	701							
437006	10/27/1984	85		140			1080	803							
437007	10/28/1984	230		280			1710	1070							
437008	10/29/1984	245		270			1880	957							
437009	10/30/1984	168		130			1230	807							
437010	10/31/1984	128		97			954	747							
437011	11/01/1984	130		30			803	632							
437012	11/02/1984	83		31			738	588							
437013	11/03/1984	46		18			673	551							
437014	11/04/1984	48		69			776	670							
437015	11/05/1984	95		150			1000	926							
437016	11/06/1984	160		210			1590	860							
437017	11/07/1984	93		190			1230	715							
437018	11/08/1984	162		100			1080	673							
437019	11/09/1984	215		130			1160	791							
437020	11/10/1984	107		64			961	712							

(continued)

TABLE A-10. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
437021	11/11/1984	117		48			916	634							
437022	11/12/1984	172		75			872	724							
437023	11/13/1984	167		84			993	632							
437024	11/14/1984	162		96			1030	662							
437050	11/14/1984	140		96			1020	693							
437025	11/15/1984	207		79			961	629							
437026	11/16/1984	113		72			761	687							
437027	11/17/1984	135		71			916	662							
437028	11/18/1984	160		72			833	564							
437029	11/19/1984	55		33			637	530							
437030	11/20/1984	24		22			580	482							
437031	11/21/1984	34		38			604	520							
437032	11/22/1984	68					637	400							
437033	11/23/1984	51		26			422	328							
437034	11/24/1984	53		18			375	349							
437035	11/25/1984	15					371	328							
437036	11/26/1984	25		20			412	375							
437037	11/27/1984	38		60			551	479							
437038	11/28/1984	91		260			1070	857							
437039	11/29/1984	78		220			951	656							
437040	11/30/1984	122		100			785	554							
437041	12/01/1984	136		160			673	523							
437042	12/02/1984	152		230			1080	710							
437043	12/03/1984	180		200			1240	788							
437044	12/04/1984	238		100			1130	744							

* Multi-Media Filter Effluent

TABLE A-11. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412902	09/11/1984	177					970	744							
412916	09/25/1984	88					738	632							
412917	09/26/1984	115					759	575							
412918	09/27/1984	348					1020	654							
412919	09/28/1984	217					922	637							
412920	09/29/1984	204					843	583							
412921	09/30/1984	218					809	632							
412922	10/01/1984	148					990	926							
412923	10/02/1984	100					744	588							
412900	10/02/1984	104					741	580							
412924	10/03/1984	190					747	676							
412925	10/04/1984	136					730	572							
412726	10/05/1984	155		34			767								
412926	10/05/1984	145					744	628							
412927	10/06/1984	167					891	809							
412928	10/07/1984	180					1120	957							
412929	10/08/1984	147					1020	860							
412930	10/09/1984	93					818	659							
412931	10/10/1984	195					885	578							
412932	10/11/1984	200					1080	779							
441103	10/24/1984	14					718	637							
441104	10/25/1984	88					894	744							
441105	10/26/1984	43					866	679							
441106	10/27/1984	63					990	818							
441107	10/28/1984	163					1740	1020							
441108	10/29/1984	145					1940	882							

(continued)

TABLE A-11. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
441109	10/30/1984	138					1310	866							
441110	10/31/1984	94					1010	750							
441111	11/01/1984	112					879	604							
441112	11/02/1984	77					860	588							
441113	11/03/1984	38					687	572							
441114	11/04/1984	36					718	659							
441115	11/05/1984	95					1050	910							
441116	11/06/1984	130					1320	830							
441117	11/07/1984	143					1190	690							
441118	11/08/1984	164					1210	681							
441119	11/09/1984	170					1090	712							
441120	11/10/1984	77					983	741							
441121	11/11/1984	87					891	681							
441122	11/12/1984	156					869	715							
441123	11/13/1984	160					1260	744							
441150	11/13/1984	153					926	632							
441124	11/14/1984	135					1090	707							
441125	11/15/1984	157					1010	563							
441126	11/16/1984	95					839	676							
441127	11/17/1984	163					869	632							
441128	11/18/1984	155					833	591							
441129	11/19/1984	50					659	499							
441130	11/20/1984	17					610	487							
441131	11/21/1984	35					578	512							
441132	11/22/1984	54					533	422							

(continued)

TABLE A-11. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
441133	11/23/1984	51					424	397							
441134	11/24/1984	49					400	375							
441135	11/25/1984	14					397	351							
441136	11/26/1984	20					424	397							
441137	11/27/1984	30					541	466							
441138	11/28/1984	61					980	833							
441139	11/29/1984	46					967	687							
441140	11/30/1984	97					797	578							
441141	12/01/1984	101					688	517							
441142	12/02/1984	132					1080	684							
441143	12/03/1984	114					1210	750							
441144	12/04/1984	96					1130	761							

* Activated Carbon Influent (composite)

TABLE A-12. ANALYTICAL DATA SUMMARY - SAMPLE POINT (N)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413402	09/11/1984	62					151	150							
413416	09/25/1984	21		10			163	88							
413417	09/26/1984	20					144	112							
413418	09/27/1984	128		41			427	134							
413419	09/28/1984	103					257	177							
413420	09/29/1984	51					168	148							
413421	09/30/1984	76					192	102							
413422	10/01/1984	61					172	93							
413423	10/02/1984	29					277	261							
413424	10/03/1984	64		19			316	192							
413425	10/04/1984	76		18			243	236							
413426	10/05/1984	72					436	251							
413427	10/06/1984	84													
413428	10/07/1984	83		35			375	281							
413429	10/08/1984	104					375	288							
413400	10/08/1984	101					351	277							
413430	10/09/1984	48					284	238							
413431	10/10/1984	49		32			243	142							
413432	10/11/1984	116					459	321							
437103	10/24/1984	20					181	71							
437104	10/25/1984	31		21			123	98							
437105	10/26/1984	37					170	64							
437106	10/27/1984	73					166	75							
437107	10/28/1984	145		20			676	185							
437108	10/29/1984	214					897	115							
437109	10/30/1984	8		20			479	127							

(continued)

TABLE A-12. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
437110	10/31/1984	102					330	144							
437111	11/01/1984	157					214	148							
437112	11/02/1984	83					208	123							
437113	11/03/1984	26					190	106							
437114	11/04/1984	25					175	144							
437115	11/05/1984	60		100			155	70							
437116	11/06/1984	108					551	254							
437117	11/07/1984	130					551	305							
437118	11/08/1984	190					610	302							
437119	11/09/1984	150		99			546	279							
437120	11/10/1984	77					449	284							
437121	11/11/1984	85		44			424	347							
437122	11/12/1984	108					407	247							
437123	11/13/1984	103					499	229							
437150	11/13/1984	140					523	241							
437124	11/14/1984	90					665	354							
437125	11/15/1984	300		78			621	373							
437126	11/16/1984	96					538	286							
437127	11/17/1984	130					523	293							
437128	11/18/1984	145					562	293							
437129	11/19/1984	36		43			366	284							
437130	11/20/1984	21					360	250							
437131	11/21/1984	28					279	212							
437132	11/22/1984	40					263	259							
437133	11/23/1984	41		30			254	192							

(continued)

TABLE A-12. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
437134	11/24/1984	39					277	265							
437135	11/25/1984	5					247	192							
437136	11/26/1984	23		20			218	216							
437137	11/27/1984	27					259	254							
437138	11/28/1984	52		150			549	466							
437139	11/29/1984	40					715	449							
437140	11/30/1984	68					607	489							
437141	12/01/1984	66		170			499	387							
437142	12/02/1984	91					655	330							
437143	12/03/1984	106		260			848	461							
437144	12/04/1984	119		130			842	499							

* Activated Carbon Effluent (composite)

TABLE A-13. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M1)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
412952	09/11/1984							851							
412966	09/26/1984							626							
412967	09/27/1984							710							
412968	09/28/1984							422							
412969	09/29/1984							687							
412970	09/30/1984							645							
412971	10/01/1984							665							
412972	10/02/1984							651							
412973	10/03/1984							572							
412950	10/03/1984							578							
412974	10/04/1984							602							
412975	10/05/1984							654							
412976	10/06/1984							632							
412977	10/07/1984						1160								
412978	10/08/1984	220					1530	866							
412979	10/09/1984							1050							
412980	10/10/1984							710							
412981	10/11/1984							637							
412982	10/12/1984							747							
435903	10/25/1984							670							
435904	10/26/1984							718							
435905	10/27/1984							712							
435906	10/28/1984							833							
435907	10/29/1984							926							
435908	10/30/1984							836							
435909	10/31/1984							718							

(continued)

TABLE A-13. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
435910	11/01/1984							693							
435911	11/02/1984							578							
435912	11/02/1984							575							
435913	11/04/1984							523							
435914	11/05/1984							836							
435915	11/06/1984							916							
435916	11/07/1984							788							
435917	11/08/1984							759							
435918	11/09/1984							662							
435919	11/10/1984							830							
435920	11/11/1984							718							
435930	11/11/1984							512							
435921	11/12/1984							656							
435922	11/13/1984							629							
435923	11/14/1984							710							
435924	11/15/1984							659							
435925	11/16/1984							747							
435950	11/16/1984							645							
435926	11/17/1984							528							
435927	11/18/1984							610							
435928	11/19/1984							538							
435929	11/20/1984							451							
435931	11/22/1984							551							
435932	11/23/1984							499							
435933	11/24/1984							449							

(continued)

TABLE A-13. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
435934	11/25/1984							469							
435935	11/26/1984							482							
435936	11/27/1984							502							
436136	11/27/1984							632							
435937	11/28/1984							551							
435938	11/29/1984							854							
435939	11/30/1984							570							
435940	12/01/1984							575							
435941	12/02/1984							744							
435942	12/03/1984							707							
435943	12/04/1984							767							
435944	12/04/1984							761							

* Activated Carbon Column #1 Influent (grab)

TABLE A-14. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M2)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413002	09/11/1984							170							
413016	09/26/1984							404							
413017	09/27/1984							530							
413018	09/28/1984							340							
413019	09/29/1984							617							
413020	09/30/1984							499							
413021	10/01/1984							556							
413022	10/02/1984							499							
413023	10/03/1984							519							
413024	10/04/1984							637							
413025	10/05/1984							474							
413026	10/06/1984							551							
413000	10/06/1984							564							
413028	10/08/1984							948							
413029	10/09/1984							866							
413030	10/10/1984							591							
413031	10/11/1984							673							
413032	10/12/1984							645							

* Activated Carbon Column #1 Midpoint

TABLE A-15. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M3)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413052	09/11/1984							138							
413066	09/26/1984							209							
413067	09/27/1984							418							
413068	09/28/1984							229							
413069	09/29/1984							533							
413070	09/30/1984							373							
413071	10/01/1984							504							
413072	10/02/1984							326							
413073	10/03/1984							476							
413074	10/04/1984							632							
413075	10/05/1984							451							
413076	10/06/1984							564							
413050	10/06/1984							578							
413078	10/08/1984							987							
413079	10/09/1984							866							
413080	10/10/1984							679							
413081	10/11/1984							599							
413082	10/12/1984							698							
436103	10/25/1984							83							
436104	10/26/1984							146							
436105	10/27/1984							136							
436106	10/28/1984							236							
436107	10/29/1984							434							
436108	10/30/1984							375							
436109	10/31/1984							610							
436110	11/01/1984							614							

(continued)

TABLE A-15. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436111	11/02/1984							474							
436112	11/03/1984							476							
436113	11/04/1984							469							
436114	11/05/1984							693							
436115	11/06/1984							776							
436116	11/07/1984							556							
436117	11/08/1984							718							
436118	11/09/1984							645							
436119	11/10/1984							827							
436120	11/11/1984							607							
436121	11/12/1984							764							
436122	11/13/1984							618							
436123	11/14/1984							651							
436124	11/15/1984							629							
436125	11/16/1984							549							
436126	11/17/1984							520							
436127	11/18/1984							618							
436128	11/19/1984							494							
436129	11/20/1984							402							
436130	11/21/1984							476							
436131	11/22/1984							482							
436132	11/23/1984							497							
436133	11/24/1984							446							
436134	11/25/1984							476							
436135	11/26/1984							446							

(continued)

TABLE A-15. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436137	11/28/1984							476							
436138	11/29/1984							812							
436139	11/30/1984							525							
436140	12/01/1984							551							
436141	12/02/1984							578							
436142	12/03/1984							632							
436143	12/04/1984							715							
436144	12/04/1984							718							

* Activated Carbon Column #1 Effluent

TABLE A-16. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M4)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413102	09/11/1984							212							
413116	09/26/1984							148							
413117	09/27/1984							281							
413118	09/28/1984							219							
413119	09/29/1984							425							
413120	09/30/1984							277							
413121	10/01/1984							402							
413122	10/02/1984							662							
413123	10/03/1984							474							
413124	10/04/1984							551							
413125	10/05/1984							328							
413126	10/06/1984							520							
413127	10/07/1984						863								
413128	10/08/1984							788							
413129	10/09/1984							1030							
413130	10/10/1984							564							
413131	10/11/1984							559							
413132	10/12/4984							894							

* Activated Carbon Column #2 Midpoint

TABLE A-17. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M5)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413152	09/11/1984							119							
413166	09/26/1984							92							
413167	09/27/1984							191							
413168	09/28/1984							159							
413169	09/29/1984							366							
413170	09/30/1984							198							
413171	10/01/1984							404							
413172	10/02/1984							179							
413173	10/03/1984							409							
413174	10/04/1984							424							
413175	10/05/1984							229							
413176	10/06/1984							390							
413178	10/08/1984							759							
413179	10/09/1984							866							
413180	10/10/1984							554							
413181	10/11/1984							451							
413182	10/12/1984							570							
436303	10/25/1984							83							
436304	10/26/1984							108							
436305	10/27/1984							132							
436306	10/28/1984							153							
436307	10/29/1984							259							
436308	10/30/1984							194							
436309	10/31/1984							214							
436310	11/01/1984							203							
436311	11/02/1984							214							

(continued)

TABLE A-17. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436312	11/03/1984							198							
436313	11/04/1984							252							
436314	11/05/1984							456							
436315	11/06/1984							580							
436316	11/07/1984							422							
436317	11/08/1984							523							
436318	11/09/1984							492							
436319	11/10/1984							718							
436320	11/11/1984							591							
436321	11/12/1984							554							
436322	11/13/1984							479							
436323	11/14/1984							575							
436350	11/14/1984							538							
436324	11/15/1984							596							
436325	11/16/1984							583							
436326	11/17/1984							412							
436327	11/18/1984							554							
436328	11/19/1984							456							
436329	11/20/1984							351							
436330	11/21/1984							385							
436331	11/22/1984							469							
436332	11/23/1984							427							
436333	11/24/1984							397							
436334	11/25/1984							419							
436335	11/26/1984							356							

(continued)

TABLE A-17. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436336	11/27/1984							412							
436337	11/28/1984							471							
436338	11/29/1984							715							
436339	11/30/1984							479							
436340	12/01/1984							494							
436341	12/02/1984							498							
436342	12/03/1984							556							
436343	12/04/1984							715							
436344	12/04/1984							634							

* Activated Carbon Column #2 Effluent

TABLE A-18. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M6)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413202	09/11/1984							106							
413216	09/26/1984							108							
413218	09/28/1984							124							
413219	09/29/1984							278							
413220	09/30/1984							174							
413221	10/01/1984							223							
413222	10/02/1984							469							
413223	10/03/1984							474							
413224	10/04/1984							279							
413225	10/05/1984							412							
413226	10/06/1984							387							
413228	10/08/1984							564							
413229	10/09/1984							776							
413230	10/10/1984							361							
413231	10/11/1984							417							
413232	10/12/1984							517							

* Activated Carbon Column #3 Midpoint

TABLE A-19. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M7)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413252	09/11/1984							111							
413266	09/26/1984							98							
413267	09/27/1984							128							
413268	09/28/1984							84							
413269	09/29/1984							211							
413270	09/30/1984							168							
413271	10/01/1984							203							
413272	10/02/1984							402							
413273	10/03/1984							300							
413274	10/04/1984							309							
413275	10/05/1984							245							
413276	10/06/1984							250							
413278	10/08/1984							701							
413279	10/09/1984							546							
413280	10/10/1984							375							
413281	10/11/1984							349							
413282	10/12/1984							451							
436503	10/25/1984							85							
436504	10/26/1984							106							
436505	10/27/1984							95							
436506	10/28/1984							143							
436507	10/29/1984							307							
436508	10/30/1984							127							
436509	10/31/1984							151							
436510	11/01/1984							190							
436511	11/02/1984							170							

(continued)

TABLE A-19. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436512	11/03/1984							108							
436513	11/04/1984							114							
436514	11/05/1984							241							
436515	11/06/1984							323							
436516	11/07/1984							354							
436517	11/08/1984							375							
436518	11/09/1984							373							
436519	11/10/1984							604							
436520	11/11/1984							461							
436521	11/12/1984							476							
436522	11/13/1984							412							
436523	11/14/1984							486							
436524	11/15/1984							523							
436550	11/15/1984							461							
436525	11/16/1984							487							
436526	11/17/1984							250							
436527	11/18/1984							499							
436528	11/19/1984							314							
436529	11/20/1984							356							
436530	11/21/1984							340							
436531	11/22/1984							328							
436532	11/23/1984							378							
436533	11/24/1984							328							
436534	11/25/1984							328							
436535	11/26/1984							314							

(continued)

TABLE A-19. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436536	11/27/1984							333							
436537	11/28/1984							373							
436538	11/29/1984							632							
436539	11/30/1984							424							
436540	12/01/1984							469							
436541	12/02/1984							375							
436542	12/03/1984							417							
436543	12/04/1984							602							
436544	12/04/1984							556							

* Activated Carbon Column #3 Effluent

TABLE A-20. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M8)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413302	09/11/1984							93							
413316	09/26/1984							71							
413317	09/27/1984							116							
413318	09/28/1984							50							
413319	09/29/1984							210							
413320	09/30/1984							142							
413321	10/01/1984							168							
413322	10/02/1984							281							
413324	10/04/1984							192							
413325	10/05/1984							252							
413326	10/06/1984							340							
413328	10/08/1984							409							
413329	10/09/1984							469							
413330	10/10/1984							305							
413331	10/11/1984							275							
413332	10/12/1984							397							

* Activated Carbon Column #4 Midpoint

TABLE A-21. ANALYTICAL DATA SUMMARY - SAMPLE POINT (M9)*

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
413452	09/11/1984							95							
413466	09/26/1984							60							
413399	09/26/1984							71							
413467	09/27/1984							123							
413468	09/28/1984							53							
413469	09/29/1984							175							
413470	09/30/1984							146							
413471	10/01/1984							123							
413472	10/02/1984							214							
413473	10/03/1984							212							
413474	10/04/1984							232							
413475	10/05/1984							354							
413476	10/06/1984							121							
413478	10/08/1984	86		44			580	302							
413479	10/09/1984							371							
413450	10/09/1984							412							
413480	10/10/1984							512							
413481	10/11/1984							192							
413482	10/12/1984							298							
436703	10/25/1984							68							
436704	10/26/1984							106							
436705	10/27/1984							81							
436706	10/28/1984							146							
436707	10/29/1984							247							
436708	10/30/1984							102							
436709	10/31/1984							119							

(continued)

TABLE A-21. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436710	11/01/1984							133							
436711	11/02/1984							127							
436712	11/03/1984							93							
436713	11/04/1984							110							
436714	11/05/1984							184							
436715	11/06/1984							216							
436716	11/07/1984							250							
436717	11/08/1984							216							
436718	11/09/1984							234							
436719	11/10/1984							397							
436720	11/11/1984							241							
436721	11/12/1984							212							
436722	11/13/1984							245							
436723	11/14/1984							330							
436724	11/15/1984							387							
436725	11/16/1984							356							
436726	11/17/1984							236							
436727	11/18/1984							316							
436728	11/19/1984							402							
436729	11/20/1984							247							
436730	11/21/1984							278							
436731	11/22/1984							259							
436732	11/23/1984							351							
436733	11/24/1984							295							
436734	11/25/1984							316							

(continued)

TABLE A-21. (continued)

SAMPLE	DATE	TSS mg/l	VSS mg/l	TBOD mg/l	NIBOD mg/l	NISBOD mg/l	TCOD mg/l	SCOD mg/l	TOC mg/l	STOC mg/l	Cl mg/l	TP mgP/l	TKN mgN/l	NH4-N mgN/l	NO3+NO2 mgN/l
436735	11/26/1984							261							
436736	11/27/1984							275							
436737	11/28/1984							328							
436738	11/29/1984							523							
436739	11/30/1984							422							
436740	12/01/1984							387							
436741	12/02/1984							305							
436742	12/03/1984							385							
436743	12/04/1984							484							
436744	12/04/1984							525							

* Activated Carbon Column #4 Effluent (grab)

APPENDIX B

QUALITY CONTROL DATA

TABLE B-1. SUMMARY OF STATISTICAL EVALUATION OF LABORATORY DUPLICATE ANALYSES.

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
410801	NISBOD	10	10	0.0	YES
410803		7	8	4.1	YES
410825		10	9	9.8	YES
411202		4	4	0.0	YES
411204		6	6	0.0	YES
411278		11	11	0.0	YES
411252		5	5	6.1 *	YES
411721		4	4	7.4 *	YES
411703		2	2	3.1 *	YES
411706		3	4	16.7	YES
411748		14	14	5.7 *	YES
411711		4	3	11.1	YES
411734		2	2	0.0	YES
412102		4	4	8.0 *	YES
412137		2	2	13.3 *	YES
412173		7	7	8.7 *	YES
412119		7	7	2.7 *	YES
412157		3	3	0.0 *	YES
412501		14	14	6.5 *	YES
412543		14	14	2.2 *	YES
412524		8	8	0.0	YES
410699	TBOD	3600	3180	12.4	YES
410601		3720	3240	13.8	YES
410600		2640	2400	9.5	YES
410605		2580	2340	9.8	YES
412708		66	69	4.4	YES
411004		3000	3240	7.7	YES
411012		2800	2925	4.4	YES
412824		52	51	1.9	YES
413428		36	35	3.4	YES
411401		3300	3060	7.5	YES
412733		93	96	3.2	YES
411406		3675	3900	5.9	YES
411408		2200	2250	2.2	YES
412941		42	48	13.3	YES
437002		23	21	6.9	YES
436804		156	165	5.6	YES
436809		216	213	1.4	YES
436815		270	252	6.9	YES
436919		150	150	0.0	YES
437119		108	108	0.0	YES
437121		40	44	9.5	YES
436829		113	110	2.7	YES
436835		66	66	0.0	YES
436937		78	78	0.0	YES
437038		108	111	2.7	YES
437143		198	195	1.5	YES
410803	NIBOD	31	32	3.8	YES
410815		31	35	10.9	YES
411202		18	17	6.9	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
411234	NIBOD	32	32	0.0	YES
411278		70	65	7.1	YES
411252		5	6	12.4	YES
411721		18	19	8.7	YES
411703		8	8	7.4 *	YES
411706		15	16	9.0	YES
411748		33	34	3.6	YES
411711		10	10	6.1 *	YES
411734		9	8	9.3	YES
412102		36	36	0.0	YES
412137		10	10	0.0	YES
412173		20	20	1.5	YES
412119		21	22	2.8	YES
412157		12	12	0.0	YES
412501		13	13	2.3 *	YES
412543		25	26	3.9	YES
412524		14	14	2.1 *	YES
410698	TCOD	6203	6453	3.9	YES
410801		818	809	1.1	YES
412797		926	926	0.0	YES
410822		1309	1274	2.7	YES
412701		1332	1301	2.3	YES
412702		2632	2840	7.6	YES
413402		151	131	14.0	YES
410824		1222	1200	1.8	YES
410815		1046	1063	1.6	YES
412705		1933	1926	0.4	YES
410817		1010	1000	1.0	YES
412707		2378	2362	0.7	YES
411002		5785	5750	0.6	YES
411003		5401	5316	1.6	YES
411264		2447	2467	0.8	YES
411265		1053	1060	0.6	YES
411006		6729	6706	0.3	YES
411237		767	761	0.8	YES
411208		727	724	0.4	YES
412715		888	869	2.1	YES
411010		6870	6636	3.5	YES
413417		144	144	0.0	YES
412818		1435	1419	1.1	YES
413419		256	259	1.0	YES
412920		839	848	1.1	YES
411275		1145	1061	7.6	YES
412822		730	712	2.4	YES
412922		1050	932	11.9	YES
412823		770	770	0.0	YES
413424		281	351	22.1	NO
413425		247	236	4.7	YES
413426		451	424	6.2	YES
413427		356	378	5.9	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
413477	TCOD	424	400	5.9	YES
412978		1553	1510	2.8	YES
413478		583	578	0.9	YES
412829		1020	993	2.6	YES
411284		1056	1056	0.0	YES
413431		245	241	1.9	YES
412882		1046	1056	1.0	YES
411743		1189	1197	0.6	YES
412734		1263	1248	1.2	YES
411725		564	512	9.7	YES
411726		487	479	1.6	YES
411747		1020	1040	1.9	YES
411728		530	546	2.9	YES
411749		1200	1168	2.7	YES
411410		6835	6934	1.4	YES
412841		863	833	3.6	YES
411412		7034	7034	0.0	YES
437001		980	990	1.0	YES
436902		744	750	0.8	YES
412161		836	851	1.8	YES
412132		530	546	2.9	YES
412103		693	687	0.8	YES
412164		756	747	1.2	YES
436807		2582	2566	0.6	YES
436908		1977	1999	1.1	YES
412167		863	875	1.4	YES
437010		954	957	0.3	YES
412139		192	192	0.0	YES
437112		232	185	22.3	NO
412171		764	773	1.1	YES
437114		181	170	6.2	YES
437115		146	169	9.1	YES
437116		564	538	4.8	YES
412175		900	891	1.0	YES
436919		1060	1040	1.9	YES
436819		1387	1468	5.7	YES
412118		466	461	1.1	YES
436921		869	891	2.5	YES
411920		5829	5776	0.9	YES
412121		1391	1387	0.3	YES
412152		328	321	2.2	YES
412183		770	767	0.4	YES
441126		839	827	1.5	YES
436927		897	907	1.0	YES
436928		830	836	0.7	YES
441129		659	659	0.0	YES
437130		359	361	0.7	YES
412193		632	632	0.0	YES
412521		232	218	5.9	YES
437131		279	279	0.0	YES
412543		773	797	3.0	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/l)	REPL. B (mg/l)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
437036	TCOD	419	404	3.6	YES
437136	↓	223	214	4.1	YES
437138		551	546	1.0	YES
410821	SCOD	687	673	2.1	YES
410822	↓	957	964	0.7	YES
412801		749	755	0.8	YES
410803		744	759	1.9	YES
413452		94	96	2.3	YES
410899		907	894	1.4	YES
410815		857	845	1.4	YES
410306		791	773	2.3	YES
410827		788	764	3.0	YES
411201		751	762	1.4	YES
411202		785	770	2.0	YES
411203		680	687	1.2	YES
411264		866	857	1.1	YES
412896		602	596	0.9	YES
411237		400	395	1.2	YES
411206		554	554	0.0	YES
411269		1000	996	0.3	YES
412816		348	328	5.8	YES
412966		316	309	2.2	YES
413017		525	533	1.0	YES
413067		422	418	1.1	YES
413118		227	213	6.2	YES
413168		160	158	1.5	YES
411273		1056	1056	0.0	YES
413419		176	178	1.3	YES
411214		525	520	1.0	YES
412820		632	632	0.0	YES
411275		957	983	2.7	YES
413121		402	446	10.5	YES
413022		575	427	29.6	NO
413422		106	81	26.8	NO
411277		1013	1164	13.9	YES
412923		589	588	0.0	YES
412973		572	578	0.9	YES
413473		323	212	41.7	NO
413274		309	402	26.1	NO
413324		192	192	0.0	YES
413474		305	232	27.2	NO
413225		556	412	29.9	NO
413275		236	256	8.2	YES
413325		238	265	10.8	YES
413475		330	375	12.8	YES
413426		124	129	4.5	YES
413476		64	58	8.7	YES
413427		371	371	0.0	YES
412878		983	983	0.0	YES
413328	↓	419	400	4.8	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/l)	REPL. B (mg/l)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
413428	SCOD	259	305	16.3	NO
413478		302	300	0.8	YES
413429		293	281	4.0	YES
413450		412	412	0.0	YES
412930		659	797	18.9	NO
412960		710	656	7.8	YES
413281		330	366	10.2	YES
413331		268	284	5.8	YES
413232		517	517	0.0	YES
413282		469	434	7.7	YES
411743		818	806	1.5	YES
412734		776	806	3.7	YES
411745		750	776	3.4	YES
411726		216	223	3.0	YES
411747		882	938	6.2	YES
411728		321	323	0.7	YES
411749		854	872	2.1	YES
412740		358	343	4.0	YES
411731		232	236	1.9	YES
437000		712	687	3.6	YES
436801		964	954	1.0	YES
436902		632	610	3.5	YES
412161		676	687	1.6	YES
435903		681	659	3.3	YES
412132		247	247	0.0	YES
436104		155	138	11.7	YES
412103		400	395	1.2	YES
436305		136	129	4.8	YES
412164		701	687	2.0	YES
436506		138	148	7.5	YES
436707		245	250	1.8	YES
436807		1339	1316	1.8	YES
436908		979	985	0.7	YES
437105		119	112	5.5	YES
412167		687	687	0.0	YES
437009		806	809	0.4	YES
436110		629	599	4.9	YES
437010		741	753	1.6	YES
412139		192	170	12.1	YES
436811		833	833	0.0	YES
436312		192	205	6.7	YES
436512		108	114	5.7	YES
436513		108	121	11.1	YES
436913		567	578	1.9	YES
436714		190	179	5.9	YES
441114		645	673	4.2	YES
412113		206	202	1.8	YES
436715		108	118	8.9	YES
435916		394	388	1.5	YES
436716		129	120	7.2	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
412175	SCOD	645	632	2.1	YES
436817		879	894	1.6	YES
412176		662	656	0.8	YES
435919		827	835	1.1	YES
437113		284	275	3.3	YES
412143		234	256	9.2	YES
437020		710	715	0.8	YES
436821		863	842	2.5	YES
441121		673	690	2.5	YES
435922		632	626	0.9	YES
436822		827	827	0.0	YES
412181		679	687	1.2	YES
437023		632	656	3.8	YES
412182		724	730	0.8	YES
436824		926	919	0.7	YES
412183		662	654	1.3	YES
437125		373	378	1.3	YES
435926		528	512	3.0	YES
436326		412	397	3.6	YES
436750		300	300	0.0	YES
436927		637	640	0.4	YES
436529		436	454	3.9	YES
436726		632	640	1.3	YES
412187		492	494	0.5	YES
435929		451	451	0.0	YES
436730		272	284	4.1	YES
437130		252	247	1.8	YES
412193		546	535	1.9	YES
412521		153	161	5.5	YES
435933		451	446	1.1	YES
436531		323	333	2.9	YES
437134		270	261	3.4	YES
412543		523	507	3.0	YES
436936		373	354	5.3	YES
441136		402	392	2.4	YES
435936		497	507	2.0	YES
436338		715	744	3.9	YES
436738		528	517	2.0	YES
437138		474	459	3.2	YES
410788	TSS	3860	3860	0.0	YES
410798		3320	3330	1.8	YES
410601		570	547	4.1	YES
410711		4440	4520	1.8	YES
410602		813	827	1.7	YES
412801		172	182	5.6	YES
410604		480	460	4.3	YES
410804		76	71	6.8	YES
412703		690	690	0.0	YES
410603		599	660	9.7	YES
412902		198	156	23.7	NO

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
410504	TSS	72347	71933	0.5	YES
410605		690	700	1.4	YES
410705		4420	4520	2.2	YES
410805		60	58	3.4	YES
412704		620	580	6.7	YES
410716		4480	4480	0.0	YES
410826		104	94	10.1	YES
410597		160	160	0.0	YES
410607		360	290	21.5	NO
411101		4640	4900	5.5	YES
411201		62	64	3.2	YES
410902		56277	56187	0.2	YES
411002		560	550	1.8	YES
411102		4440	4700	5.7	YES
411162		3940	4200	6.4	YES
410904		15788	15803	0.1	YES
411004		650	660	1.5	YES
410955		82583	83173	0.7	YES
411235		294	306	4.0	YES
410956		76187	76220	0.0	YES
412812		136	134	1.5	YES
411107		5300	5100	3.8	YES
411207		88	90	2.2	YES
411008		1070	970	9.8	YES
412864		61	61	0.0	YES
411269		82	85	3.6	YES
412815		260	224	14.9	YES
410910		14870	14440	2.9	YES
411170		3160	3260	3.1	YES
412716		120	124	3.3	YES
412917		114	116	1.7	YES
413417		20	20	0.0	YES
412869		347	307	12.2	YES
413419		99	106	6.8	YES
411112		4740	4980	4.9	YES
411242		270	230	16.0	NO
411214		95	84	12.3	YES
412870		220	200	9.5	YES
411015		650	650	0.0	YES
412921		220	215	2.3	YES
411003		460	470	2.2	YES
411103		4820	5120	6.0	YES
411163		3960	3840	3.1	YES
411246		88	82	7.1	YES
412722		150	150	0.0	YES
410917		12740	13154	3.2	YES
410967		63615	65095	5.3	YES
411218		33	31	6.3	YES
412924		192	188	2.1	YES
411200		29	28	3.5	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
413425	TSS	74	77	4.0	YES
412926		147	143	2.8	YES
413426		73	70	4.2	YES
4111[illegible]		5480	5400	1.5	YES
411[illegible]		550	540	1.8	YES
4112[illegible]		110	78	34.7	NO
413428		86	80	7.2	YES
413478		88	83	5.6	YES
413400		98	104	5.9	YES
413429		108	100	7.7	YES
411284		68	76	11.1	YES
413430		48	41	15.7	NO
411321		60510	60345	0.3	YES
411501		5580	5520	1.1	YES
411541		6100	6500	6.3	YES
411722		310	302	2.6	YES
413432		112	120	6.9	YES
411703		47	49	4.2	YES
412883		120	157	26.7	NO
411405		670	580	14.4	YES
411505		5780	5780	0.0	YES
411406		1140	1220	6.8	YES
411526		8160	8180	0.2	YES
411307		18296	18500	1.1	YES
411407		590	590	0.0	YES
411508		5540	5640	1.8	YES
411548		5320	4960	7.0	YES
411749		133	133	0.0	YES
412739		350	340	2.9	YES
411550		4500	4600	2.2	YES
411730		196	208	4.9	YES
411751		108	110	2.3	YES
412841		40	43	7.2	YES
411512		5640	5660	0.4	YES
411752		102	106	3.8	YES
411553		4000	4080	2.0	YES
437001		17	17	0.0	YES
411334		59487	56448	5.2	YES
411714		223	220	1.4	YES
411544		4760	4600	3.4	YES
412734		290	300	3.4	YES
412031		7060	7120	0.8	YES
436803		275	295	7.0	YES
412002		5540	5420	2.2	YES
412062		4020	3880	3.5	YES
412063		3960	4080	3.0	YES
436905		75	80	6.5	YES
412034		9240	8240	11.4	YES
437006		86	84	2.4	YES
412165		53	50	5.8	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
436607	TSS	570	540	5.4	YES
437108		217	210	3.3	YES
441103		147	143	2.8	YES
412007		6480	6440	0.6	YES
412107		46	47	2.1	YES
412138		55	53	3.7	YES
412168		86	84	2.4	YES
412039		8320	8380	0.7	YES
412069		4200	4480	6.5	YES
436812		230	240	4.3	YES
436912		115	115	0.0	YES
411911		610	610	0.0	YES
437113		26	26	0.0	YES
412142		116	108	7.1	YES
441114		37	35	5.6	YES
412073		4580	4560	0.4	YES
437115		56	64	13.3	YES
412144		60	54	10.5	YES
436816		280	270	3.5	YES
412145		36	42	15.4	NO
437117		127	133	5.1	YES
437018		152	172	12.3	YES
437118		177	203	14.0	YES
412047		7900	8000	1.3	YES
412077		5060	4620	9.1	YES
412148		20	24	18.2	NO
436820		140	173	21.3	NO
412019		6920	7060	2.0	YES
412079		4960	4880	1.6	YES
412181		100	100	0.0	YES
436923		156	152	2.6	YES
412020		6100	6220	1.9	YES
412080		4980	5020	0.8	YES
412122		2280	2260	0.9	YES
437024		170	153	10.3	YES
412183		140	125	11.3	YES
437126		98	94	4.2	YES
441126		96	94	2.1	YES
412025		6150	6240	1.5	YES
412125		520	510	1.9	YES
411926		315	390	21.3	NO
412026		4820	4800	0.4	YES
412057		8640	8700	0.7	YES
412087		4660	4600	1.3	YES
412028		4140	4080	1.5	YES
437130		20	21	4.9	YES
412029		4340	4400	1.4	YES
441131		33	36	8.7	YES
412030		3880	3900	0.5	YES
412130		3420	3370	1.5	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
412093	TSS	4540	4600	1.3	YES
441133		51	51	0.0	YES
411932		350	350	0.0	YES
412096		4120	4150	0.7	YES
412441		4120	4120	0.0	YES
437135		5	5	0.0	YES
412522		66	72	8.7	YES
441136		20	20	0.0	YES
412543		250	255	2.0	YES
412524		110	110	0.0	YES
437038		78	104	28.6	NO
437043		180	174	3.4	YES
410798	VSS	3100	3080	0.6	YES
410601		440	400	9.5	YES
410602		620	640	3.2	YES
410604		330	320	3.1	YES
410804		60	57	5.1	YES
410603		447	460	2.9	YES
410605		520	550	5.6	YES
410805		50	50	0.0	YES
410826		98	94	4.2	YES
410607		260	210	21.3	NO
411201		52	48	8.0	YES
411002		360	350	2.8	YES
411162		3380	3640	7.4	YES
411235		264	268	1.5	YES
411008		770	720	6.7	YES
411170		2840	2380	1.4	YES
411242		210	185	12.7	YES
411214		61	62	1.6	YES
411003		390	420	7.4	YES
411163		3400	3400	0.0	YES
411246		56	62	10.2	YES
411218		27	28	3.6	YES
411282		63	55	13.6	YES
411284		64	70	9.0	YES
411541		4940	5040	2.0	YES
411722		280	276	1.4	YES
411703		41	41	0.0	YES
411405		460	410	11.5	YES
411406		720	720	0.0	YES
411548		4260	4120	3.3	YES
411749		120	110	8.7	YES
411550		3940	3900	1.0	YES
411730		188	178	5.5	YES
411751		88	85	2.9	YES
411752		76	72	5.4	YES
411553		3700	3460	6.7	YES
411714		123	120	2.5	YES
411544		4140	4020	2.9	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
411407	VSS	400	400	0.0	YES
412062		3420	3420	0.0	YES
412165		50	52	3.9	YES
412107		41	39	5.0	YES
412069		3580	3800	6.0	YES
41 911		520	520	0.0	YES
412142		94	90	4.3	YES
412073		3940	3880	1.5	YES
412077		4340	4000	8.2	YES
412079		4360	4300	1.4	YES
412181		77	80	4.2	YES
412183		117	90	26.1	NO
412125		410	340	18.7	NO
412087		1660	1700	2.4	YES
412093		3960	4020	1.5	YES
412441		3640	3620	0.6	YES
412522		56	56	0.0	YES
412543		180	215	17.7	NO
412524		80	80	0.0	YES
443605	NH3	0.83	0.83	0.0	YES
443608		0.02	0.02	0.9*	YES
443626		52.80	52.00	1.5	YES
443633		0.02	0.02	4.5*	YES
443637		0.01	0.01	5.5*	YES
443640		0.15	0.15	0.7*	YES
443649		<0.01	<0.01	11.8*	YES
453503		0.42	0.42	0.7*	YES
412127		3.87	4.20	6.1	YES
411923		247.40	246.81	0.2	YES
318500		0.14	0.14	0.7*	YES
462900		<0.01	<0.01	29.2*	YES
462905		0.01	0.01	6.4*	YES
419600	TKN	2.03	1.96	3.4	YES
364108		23.96	23.75	0.8	YES
408203		0.68	0.68	0.0	YES
415800		0.64	0.66	2.3	YES
415808		1.02	1.05	3.2	YES
421403		0.71	0.72	1.7	YES
384604		0.41	0.38	7.8	YES
441610		0.73	0.79	6.9	YES
453300		1.05	1.01	4.2	YES
457500		0.37	0.30	18.4	NO
385302		0.75	0.65	14.4	YES
385303		0.52	0.46	12.1	YES
402890		24.19	24.32	0.5	YES
443605	NO3+NO2	0.01	0.01	3.4*	YES
443608		0.04	0.04	0.7*	YES
443626		31.20	30.80	1.3	YES
443633		0.01	0.01	26.6*	YES
443637		<0.01	<0.01	12.3*	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
443640	NO3+NO2	0.05	0.06	0.3*	YES
453503		0.03	0.03	0.0	YES
412127		23.62	23.74	0.4	YES
411923		3.27	3.27	0.0	YES
318500		<0.01	0.01	6.8	YES
462900		<0.01	<0.01	11.9*	YES
462905		0.03	0.03	2.9*	YES
419600	TP	0.56	0.58	2.9	YES
408201		0.33	0.32	3.9	YES
408203		0.13	0.13	1.5*	YES
415800		0.13	0.13	3.5*	YES
415805		0.70	0.69	0.7	YES
33333	TOC	35	35	0.0	YES
301900		3	4	33.5	NO
301903		2	3	55.1	NO
385000		2	2	2.4*	YES
385002		16	16	0.9*	YES
400602		22	22	2.9*	YES
405000		92	85	8.2	YES
408200		6	6	7.6*	YES
410600		2197	2118	3.7	YES
410801		232	238	2.6	YES
410814		313	285	9.4	YES
411010		2026	1867	8.2	YES
411202		279	274	1.8	YES
411234		153	174	12.8	YES
411270		337	360	6.7	YES
411701		176	162	8.3	YES
411724		133	168	23.0	NO
411232		221	227	2.7	YES
411742		237	210	12.4	YES
411216		158	163	3.4	YES
411278		347	297	15.5	NO
411401		2376	2371	0.2	YES
411402		1735	1680	3.2	YES
411746		270	266	1.5	YES
411752		282	287	1.8	YES
411710		138	142	2.9	YES
411731		109	112	2.7	YES
411750		271	298	9.4	YES
411727		74	70	5.7	YES
411730		56	56	0.7*	YES
411284		290	284	2.1	YES
411913		1598	1454	9.5	YES
411917		1871	1900	1.5	YES
411919		1841	1923	4.4	YES
412117		87	106	19.9	NO
412147		59	54	9.2	YES
412173		247	264	6.7	YES
412149		65	64	1.6	YES

(continued)

TABLE B-1. (continued)

ID NO.	Parameter	REPL. A (mg/1)	REPL. B (mg/1)	% DIFF.	ANALYSIS IN CONTROL (YES OR NO)
410804	STOC	231	227	1.8	YES
410997		219	227	3.7	YES
411232		221	227	2.7	YES
411723		50	94	61.8	NO
411732		66	51	26.8	NO
411742		237	210	12.4	YES
411751		253	256	1.0	YES
411272		272	263	3.3	YES
411703		274	263	4.3	YES
411714		129	117	9.9	YES
41127		74	70	5.7	YES
411730		56	56	0.1*	YES
411284		240	234	2.5	YES
412107		128	127	0.8	YES
412165		241	234	2.9	YES
412177		192	188	2.3	YES
412179		199	198	0.7	YES
412107		114	117	2.1	YES
412149		65	65	0.2*	YES
410699	CL	1320	1350	2.2	YES
410698		1325	1350	1.9	YES
410600		1500	1450	3.4	YES
410601		1550	1550	0.0	YES
410602		1700	1700	0.0	YES
410606		1100	1100	0.0	YES
410607		1295	1305	0.8	YES
411001		1550	1450	6.7	YES
411002		1340	1345	0.4	YES
411009		1450	1450	0.0	YES
411012		1100	1150	4.4	YES
411000		1425	1400	1.8	YES
411018		1650	1600	3.1	YES
411022		1550	1550	0.0	YES
411407		1150	1200	4.3	YES
411408		1225	1200	2.1	YES
411407		1150	1200	4.3	YES
411408		1225	1200	2.1	YES
411913		982	982	0.0	YES
411917		1424	1473	3.4	YES
411919		1424	1522	6.7	YES
411923		1277	1277	0.0	YES
385200		33	33	1.5*	YES
402870		308	300	2.9	YES
408400		14	15	9.7	YES
438600		17	16	3.1	YES
440800		22	22	1.8*	YES
411927		1129	1129	0.0	YES
411931		442	432	2.3	YES
412301		687	663	3.6	YES
412303		1277	1277	0.0	YES
412304		344	334	2.9	YES

*Percent differences were calculated prior to rounding the replicate sample analytical results.

TABLE B-2. SUMMARY OF STATISTICAL EVALUATION OF LABORATORY SPIKE ANALYSES.

ID NO.	Parameter	KNOWN* (mg/1)	UNSPIKED** (mg/1)	FOUND *** (mg/1)	%RECOVERY# (%)	ANALYSIS IN CONTROL (YES OR NO)
410698	TCDD	500.0	315.77	487.21	97.44	YES
410801		500.0	202.91	500.51	100.10	YES
410802		500.0	461.19	467.45	93.49	YES
412801		500.0	480.35	486.93	97.39	YES
412702		500.0	1312.10	434.94	86.99	YES
410824		500.0	600.10	457.85	91.57	YES
410815		500.0	526.54	467.36	93.47	YES
412705		500.0	193.28	486.23	97.25	YES
410817		500.0	504.82	449.41	89.88	YES
411001		500.0	443.29	503.19	100.64	YES
412707		500.0	236.96	509.72	101.94	YES
411002		500.0	288.37	475.30	95.06	YES
411202		500.0	459.61	453.98	90.80	YES
411003		500.0	267.51	487.63	97.53	YES
411233		500.0	498.24	466.42	93.28	YES
411264		500.0	1223.39	435.82	87.16	YES
411006		500.0	223.53	479.89	95.98	YES
411237		500.0	382.17	480.47	96.09	YES
411208		500.0	363.36	482.87	96.57	YES
412715		500.0	439.29	507.19	101.44	YES
411010		500.0	225.09	478.33	95.67	YES
413417		500.0	72.09	480.10	96.02	YES
412818		500.0	713.55	483.04	96.61	YES
412919		500.0	461.19	482.73	96.55	YES
413420		500.0	83.90	480.49	96.10	YES
411275		500.0	141.09	475.50	95.10	YES
412722		500.0	428.52	490.06	98.01	YES
412823		500.0	385.10	484.67	96.93	YES
413424		500.0	140.73	477.71	95.54	YES
413425		500.0	123.68	440.71	88.14	YES
413426		500.0	218.20	432.22	86.44	YES
413477		500.0	212.02	451.87	90.37	YES
413478		500.0	290.14	465.00	93.00	YES
412829		500.0	509.79	457.48	91.50	YES
411284		500.0	528.23	468.37	93.67	YES
413431		500.0	122.55	514.58	102.92	YES
412892		500.0	523.16	478.85	95.77	YES
411743		500.0	596.47	475.97	95.19	YES
412734		500.0	627.74	501.75	100.35	YES
411725		500.0	256.09	488.48	97.70	YES
411726		500.0	240.76	508.03	101.61	YES
411747		500.0	514.79	492.69	98.54	YES
411728		500.0	269.05	511.90	102.38	YES
411749		500.0	591.05	438.54	87.71	YES
411750		500.0	528.23	506.97	101.39	YES
412891		500.0	423.94	492.14	98.43	YES
411412		500.0	351.71	518.06	103.61	YES
437001		500.0	492.51	496.00	99.20	YES
436902		500.0	373.45	449.79	89.96	YES
412161		500.0	421.66	472.22	94.44	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED (mg/1)	FOUND (mg/1)	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
412132	TCOD	500.0	269.05	490.34	98.07	YES
412103		500.0	344.90	476.06	95.21	YES
412164		500.0	375.62	487.03	97.41	YES
436807		500.0	257.39	517.04	103.41	YES
436908		500.0	988.51	433.31	86.66	YES
412167		500.0	434.66	471.49	94.30	YES
437010		500.0	477.93	476.30	95.26	YES
412139		500.0	95.89	502.39	100.48	YES
437112		500.0	104.14	476.16	95.23	YES
412171		500.0	384.37	457.22	91.44	YES
437114		500.0	37.70	473.19	94.64	YES
437115		500.0	154.59	499.66	99.93	YES
437116		500.0	275.59	479.55	95.91	YES
412175		500.0	447.06	517.60	103.52	YES
436918		500.0	524.85	510.35	102.07	YES
436819		500.0	713.55	463.40	92.68	YES
412118		500.0	231.93	483.66	96.73	YES
436921		500.0	440.84	480.25	96.05	YES
411920		500.0	145.07	526.60	105.32	YES
412121		500.0	693.39	461.13	92.23	YES
412152		500.0	162.76	505.01	101.00	YES
412183		500.0	334.37	507.07	101.41	YES
441126		500.0	416.35	429.88	85.98	YES
436927		500.0	454.88	466.47	93.29	YES
436928		500.0	416.35	484.87	96.97	YES
441129		500.0	329.54	493.70	98.74	YES
437130		500.0	179.91	491.77	98.35	YES
412193		500.0	315.77	496.16	99.23	YES
412521		500.0	112.47	494.92	98.98	YES
437131		500.0	139.59	495.66	99.13	YES
412543		500.0	392.45	498.99	99.80	YES
437136		500.0	109.13	471.17	94.23	YES
437138		500.0	274.28	480.86	96.17	YES
410821	SCOD	500.0	339.28	481.68	96.34	YES
410822		500.0	480.35	508.17	101.63	YES
412851		500.0	366.03	498.99	99.80	YES
410803		500.0	375.62	472.94	94.59	YES
412952		500.0	425.47	470.65	94.17	YES
410899		500.0	447.06	474.03	94.81	YES
410815		500.0	425.47	465.97	93.19	YES
410806		500.0	395.41	467.24	93.45	YES
410827		500.0	393.93	449.98	90.00	YES
411201		500.0	377.57	509.01	101.80	YES
411231		500.0	389.30	498.28	99.66	YES
411202		500.0	383.30	491.04	98.21	YES
411232		500.0	390.47	484.07	96.81	YES
411203		500.0	341.73	479.23	95.85	YES
411263		500.0	420.79	482.89	96.58	YES
411264		500.0	430.05	508.74	101.75	YES
412896		500.0	299.14	475.29	95.06	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED (mg/1)	FOUND (mg/1)	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
411237	SCOD	500.0	193.57	477.02	95.40	YES
411208		500.0	276.91	495.36	99.07	YES
411269		500.0	499.06	465.59	93.12	YES
412816		500.0	337.89	454.02	90.80	YES
412966		500.0	313.04	478.86	95.77	YES
413017		500.0	265.14	473.15	94.63	YES
413118		500.0	109.72	454.67	90.93	YES
413419		500.0	88.46	491.83	98.37	YES
412820		500.0	315.77	465.17	93.03	YES
413121		500.0	212.02	436.40	87.68	YES
413422		500.0	52.97	488.88	97.78	YES
411277		500.0	506.48	474.02	94.80	YES
413474		500.0	115.82	429.47	85.89	YES
413475		500.0	118.06	432.40	86.48	YES
413476		500.0	60.88	539.22	107.84	YES
413427		500.0	185.29	546.76	109.35	YES
411222		500.0	329.54	425.60	85.12	YES
413450		500.0	205.88	431.24	86.25	YES
412930		500.0	329.54	471.22	94.24	YES
413331		500.0	133.87	488.27	97.65	YES
413282		500.0	225.66	485.85	97.17	YES
411743		500.0	405.83	488.05	97.61	YES
412734		500.0	393.93	502.39	100.48	YES
411745		500.0	330.71	479.57	95.91	YES
411726		500.0	103.13	516.74	103.35	YES
411747		500.0	454.98	466.20	93.24	YES
411729		500.0	160.42	488.09	97.62	YES
411749		500.0	431.59	452.58	90.52	YES
411710		500.0	221.93	471.46	94.29	YES
411711		500.0	224.42	505.56	101.11	YES
437000		500.0	349.13	467.31	93.46	YES
436801		500.0	479.54	456.71	91.34	YES
436902		500.0	310.32	488.21	97.64	YES
435903		500.0	335.09	463.44	92.69	YES
412132		500.0	123.68	507.81	101.56	YES
412103		500.0	199.78	493.61	98.72	YES
436305		500.0	66.19	479.10	95.82	YES
412164		500.0	347.01	471.69	94.34	YES
436506		500.0	71.52	475.48	95.10	YES
436707		500.0	122.55	475.73	95.15	YES
436807		500.0	669.72	526.87	105.37	YES
436908		500.0	439.29	469.33	93.87	YES
437108		500.0	56.13	478.89	95.78	YES
412167		500.0	343.49	482.02	96.40	YES
437009		500.0	403.59	500.10	100.02	YES
436110		500.0	306.93	469.67	93.93	YES
437010		500.0	373.45	470.46	94.09	YES
436811		500.0	416.35	451.04	90.21	YES
436312		500.0	99.18	484.69	96.94	YES
436512		500.0	55.60	489.68	97.94	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/l)	UNSPIKED (mg/l)	FOUND (mg/l)	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
436913	SCOD	500.0	286.15	490.45	98.09	YES
436714		500.0	92.06	467.09	93.42	YES
412113		500.0	204.66	490.73	98.15	YES
436716		500.0	124.81	527.53	105.51	YES
412175		500.0	319.88	478.65	95.73	YES
412176		500.0	329.54	493.70	99.74	YES
437119		500.0	139.59	505.12	101.02	YES
412148		500.0	122.55	475.73	95.15	YES
436821		500.0	425.47	490.62	98.12	YES
435922		500.0	314.41	477.49	95.50	YES
412131		500.0	340.68	496.28	99.26	YES
412182		500.0	363.36	523.22	104.64	YES
436525		500.0	267.75	481.04	96.21	YES
435926		500.0	259.96	497.30	99.46	YES
436927		500.0	319.20	497.24	99.45	YES
436528		500.0	222.55	501.24	100.25	YES
412137		500.0	246.49	493.90	98.78	YES
437130		500.0	124.81	495.49	99.10	YES
412133		500.0	270.35	550.61	110.12	YES
412521		500.0	78.50	484.14	96.83	YES
436531		500.0	163.93	467.55	93.51	YES
437134		500.0	132.74	483.85	96.77	YES
412543		500.0	257.38	541.15	108.23	YES
441136		500.0	196.57	494.82	98.96	YES
435936		500.0	250.96	525.64	105.13	YES
437138		500.0	233.19	480.37	96.07	YES
443605	NH3	0.13	0.03	0.14	108.80	YES
443608		0.13	0.02	0.12	99.32	YES
443633		0.13	0.02	0.12	96.40	YES
443637		0.13	0.01	0.12	93.20	YES
443649		0.13	0.0	0.12	94.46	YES
453503		0.13	0.42	0.13	102.40	YES
412127		0.13	0.04	0.13	101.30	YES
411923		0.13	0.25	0.12	97.43	YES
318500		0.13	0.14	0.12	94.40	YES
462905		0.13	0.01	0.12	93.72	YES
419600	TKN	0.80	2.03	0.85	105.76	YES
364108		0.80	0.96	0.79	98.26	YES
335000		0.80	0.26	0.85	105.69	YES
415800		0.80	0.64	0.77	96.39	YES
384604		0.80	0.41	0.62	77.47	NO
453300		0.80	1.05	0.81	101.32	YES
457500		0.74	0.37	0.72	97.47	YES
385303		0.74	0.44	0.98	131.78	NO
408503		0.74	0.73	0.97	130.50	NO
443605	NO3+NO2	0.13	0.01	0.12	95.12	YES
443608		0.13	0.04	0.12	97.56	YES
443633		0.13	0.01	0.12	94.55	YES
443637		0.13	0.0	0.12	95.77	YES
443649		0.13	0.0	0.12	96.87	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED (mg/1)	FOUND (mg/1)	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
453503	NO3+NO2	0.13	0.03	0.09	74.72	NO
412127		0.13	0.29	0.13	104.42	YES
411923		0.13	0.0	0.12	99.01	YES
318500		0.13	0.0	0.12	99.72	YES
462905		0.13	0.03	0.12	99.04	YES
419600	TP	0.37	0.56	0.38	103.85	YES
301905		0.37	0.0	0.36	97.15	YES
415800		0.37	0.13	0.37	100.28	YES
415805		0.37	0.70	0.35	94.77	YES
385002	TOC	10.0	16.27	10.07	100.69	YES
385004		10.0	10.20	13.13	131.29	NO
410600		10.0	21.51	12.43	124.31	NO
410801		10.0	23.47	12.57	125.71	NO
410814		10.0	29.87	9.97	99.73	YES
411010		10.0	19.47	9.63	96.28	YES
411234		10.0	16.39	10.15	101.48	YES
411270		10.0	34.85	9.45	94.53	YES
411202		10.0	23.34	8.82	88.22	YES
411262		10.0	25.94	11.13	111.25	YES
411216		10.0	15.75	9.81	98.11	YES
411278		10.0	29.69	8.73	87.31	YES
411402		10.0	17.35	8.84	88.35	YES
411412		10.0	18.76	8.51	85.10	YES
411746		10.0	27.03	8.80	88.05	YES
411710		10.0	28.42	9.87	98.68	YES
411750		10.0	29.83	11.55	115.50	NO
411727		10.0	14.16	9.56	95.53	YES
411284		100.0	28.70	100.00	100.00	YES
412117		20.0	48.22	18.63	93.14	YES
412173		20.0	65.93	20.79	103.94	YES
412149		80.0	64.00	83.30	104.12	YES
410804	STOC	10.0	22.84	10.96	109.56	YES
411202		10.0	23.34	8.82	88.22	YES
411234		10.0	10.97	10.58	105.84	YES
411262		10.0	25.94	11.13	111.25	YES
411724		10.0	8.59	11.10	111.04	YES
411248		10.0	25.05	10.42	104.23	YES
411272		10.0	26.33	12.51	125.09	NO
411703		10.0	27.41	11.39	113.90	YES
41127		10.0	14.16	9.56	95.58	YES
411284		100.0	28.70	100.00	100.00	YES
412107		20.0	64.13	23.01	115.04	NO
412179		20.0	49.38	22.22	111.11	YES
412149		80.0	64.00	83.30	104.12	YES
410699	CL	2500.0	1350.00	2499.00	99.96	YES
410698		2500.0	1340.00	2509.00	100.36	YES
410601		2500.0	1550.00	2500.00	100.00	YES
410602		2500.0	1700.00	2500.00	100.00	YES
410603		2500.0	1500.00	2450.00	98.00	YES
410607		2500.0	1300.00	2499.00	99.96	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED (mg/1)	FOUND (mg/1)	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
411001	CL	2500.0	1500.00	2529.00	101.16	YES
411002		2500.0	1342.00	2257.00	90.28	YES
411009		2500.0	1450.00	2550.00	102.00	YES
411012		2500.0	1125.00	2525.00	101.00	YES
411016		2500.0	1450.00	2500.00	100.00	YES
411018		2500.0	1625.00	2475.00	99.00	YES
411022		2500.0	1550.00	2500.00	100.00	YES
411408		2500.0	1225.00	2525.00	101.00	YES
411407		2500.0	1175.00	2525.00	101.00	YES
411409		1500.0	1222.50	1527.50	101.83	YES
411913		2500.0	982.00	2455.00	98.20	YES
411917		2500.0	1443.00	2455.00	98.20	YES
411919		2500.0	1473.00	2406.00	96.24	YES
411923		3000.0	1277.00	3044.00	101.47	YES
385201		30.0	22.00	29.00	96.67	YES
402870		300.0	308.30	257.90	85.97	YES
440800		15.0	21.80	14.00	93.33	YES
446800		15.0	22.20	13.60	90.67	YES
453500		15.0	11.20	14.90	99.33	YES
411927		2500.0	1129.00	2504.00	100.16	YES
411931		1000.0	437.00	997.00	99.70	YES
412301		750.0	675.00	749.00	99.87	YES
412303		2500.0	1277.00	2503.00	100.12	YES
412304		1000.0	339.00	996.00	99.60	YES
410601	TBOD	200##			90	YES
412701					95	YES
410600					77.5	NO
410605					63	NO
412708					95	YES
411004					77.5	NO
412896					102.5	YES
412863					85	YES
412813					95	YES
412714					85	YES
412814					97.5	YES
412864					92.5	YES
412814					90	YES
412864					90	YES
412716					82.5	YES
412816					85	YES
412866					92.5	YES
413416					87.5	YES
412866					62.5	NO
413416					67.5	YES
412817					92.5	YES
412819					62.5	NO
412869					92.5	YES
412820					97.5	YES
412870					82.5	YES
412821					92.5	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED	FOUND	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
412871	TBOD	200##			92.5	YES
412822					100	YES
412872					85	YES
412823					67.5	NO
412873					85	YES
412824					87.5	YES
412874					90	YES
412825					100	YES
412875					90	YES
413425					105	YES
412826					95	YES
412876					95	YES
412726					100	YES
412827					97.5	YES
412877					102.5	YES
412828					87.5	YES
412829					100	YES
412879					90	YES
412730					92.5	YES
412830					90	YES
412831					80	YES
412832					92.5	YES
411406					90	YES
412837					92.5	YES
412841					87.5	YES
436815					95	YES
437016					102.5	YES
436918					105	YES
436819					97.5	YES
437119					92.5	YES
437020					97.5	YES
437121					105	YES
436922					97.5	YES
437023					112.5	YES
437017					95	YES
436924					110	YES
437125					92.5	YES
437026					87.5	YES
436927					54	NO
437028					100	YES
436829					77.5	NO
437030					87.5	YES
437031					85	YES
437133					110	YES
437034					100	YES
436835					95	YES
436936					90	YES
436937					87.5	YES
437038					90	YES
437039					92.5	YES

(continued)

TABLE B-2. (continued)

ID NO.	Parameter	KNOWN (mg/1)	UNSPIKED	FOUND	%RECOVERY (%)	ANALYSIS IN CONTROL (YES OR NO)
437040	TBOD	200 ##			92.5	YES
437041					112.5	YES
436942					112.5	YES
437044					117.5	YES
410801	NISBOD	200 ##			105	YES
410803					97.5	YES
410815					97.5	YES
411202					80	YES
411234					92.5	YES
411242					75	YES
411278					105	YES
411252					87.5	YES
411701					85	YES
411703					88.8	YES
411726					85	YES
411748					75	YES
411711					100	YES
411734					92.5	YES
412137					80	YES
412173					85	YES
412119					102.5	YES
412157					90	YES
412543					87.5	YES
412524					95	YES
411734	NIBOD	200 ##			52.5	NO
412102					77.5	NO
412137					87.5	YES
412173					>60	NO
412119					90	YES
412157					75	NO
412501					85	YES
412524					105	YES
410801					85	YES
410815					82.5	YES
411202					87.5	YES
411204					82.5	YES
411242					92.5	YES
411278					105	YES
411252					92.5	YES
411701					70	NO
411703					90	YES
411706					90	YES
411726					72.5	NO
411748					77.5	NO
411711					87.5	YES

*Known = concentration added to sample for spiking

**Unspiked = concentration measured in sample

***Found = concentration measured in spiked sample minus concentration measured in unspiked sample

#Percent recovery = percent of "known" that was measured in spiked sample

$$\text{percent recovery} = \frac{\text{found}}{\text{known}} \times 100$$

##Spike levels for all BOD's were 200 mg/1

APPENDIX C

BIOLOGICAL TREATMENT PLANT DATA

INTRODUCTION

Basis for calculations of average flows, loadings, etc.

1. For consistency, each operation day starts at 7:00A.M.

2. Day 1 started at 7:00 A.M. September 7, 1984. (i.e. day 1 is 7:00 A.M. 9/7/84 to 7:00 A.M. 9/8/84).

3. The following procedure was used to determine average daily flows:

   a. When consecutive flow measurements were different, it was assumed that the flow changed gradually during the period between the two measurements and that the average of the two measured values fairly represented the average flow over the period. This average value was used to calculate the volume of flow for that period.

   b. When the period between measurements spanned two operating days (i.e. when the period included 7:00 A.M.) the volume of flow in that period was divided between the two operating days proportional to time.

   c. The total volume [illegible] flow for each operating day divided by the time for each operating day (1440 min) was used to calculate the daily average flow.

4. Results of analyses of composite samples are assumed to cover the period from 7:00 A.M. to 7:00 A.M. regardless of the actual compositing start and end time. In most cases, sample compositing ended between 7:00 A.M. and 9:00 A.M. each day.

5. Hydraulic retention time (HRT) was calculated by dividing the aeration tank volume by the volume of raw waste added each operating day.

6. Solids retention time (SRT) was calculated by dividing the weight of solids in the aeration tank by the weight of solids removed in the effluent and the waste mixed liquor each day.

7. Mass loading ratios (F/M ratios) were calculated by dividing the weight of COD (or BOD) added each day by the product of the aeration tank volume and the average mixed liquor suspended solids concentration for that day. Calculations were also performed using the average mixed liquor volatile suspended solids value for BTS-3.

8. Calculated PAC dosages were based on the PAC slurry target concentration, the average slurry feed rate and the average raw feed flow rate. The PAC slurry target concentration was based on the weight of carbon and the volume of water added to the slurry tanks.

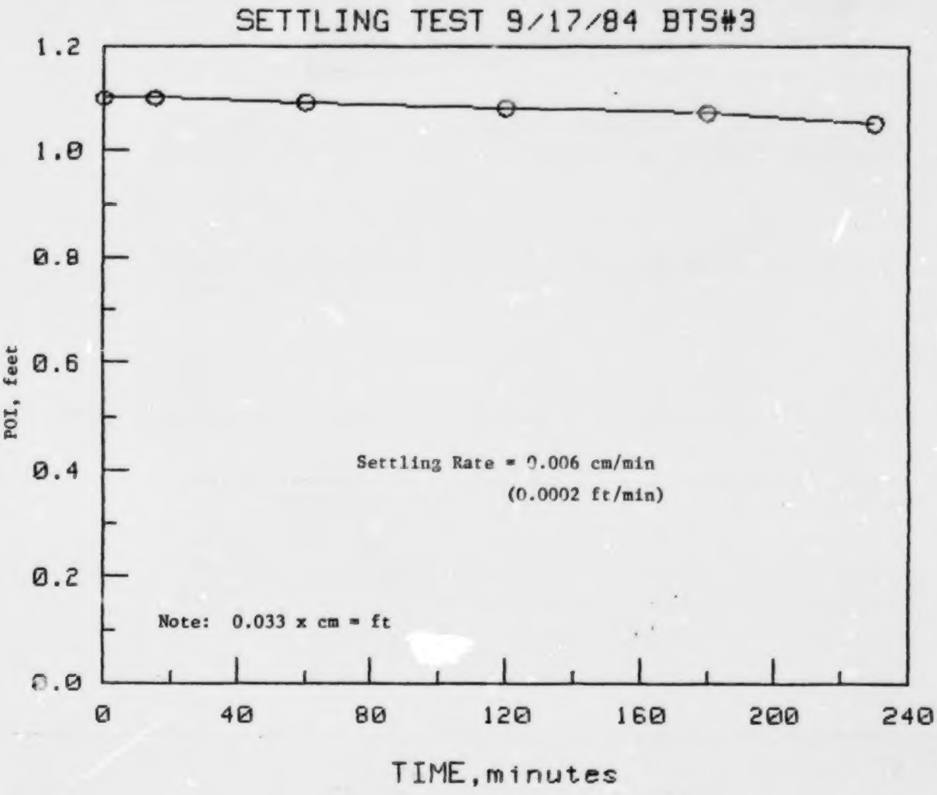


Figure C-1. Clarification Settling Test (9/17/84).

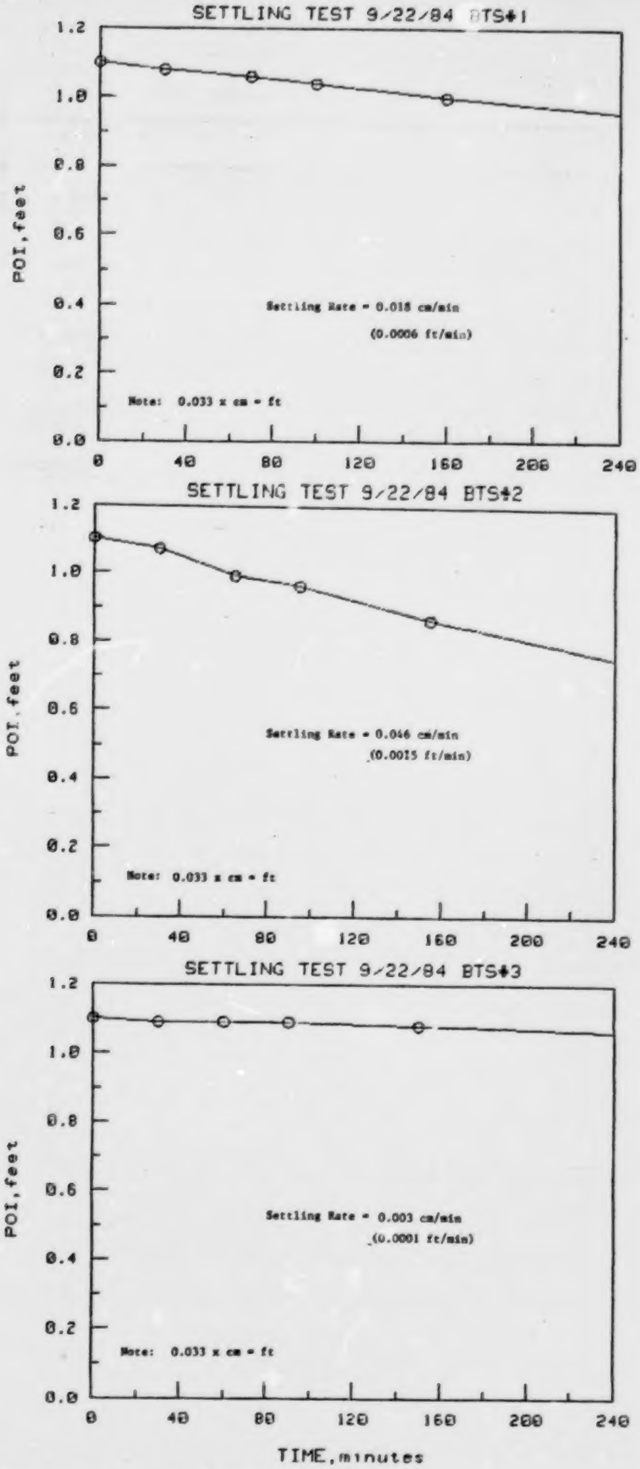


Figure C-2. Clarification Settling Tests (9/22/84).

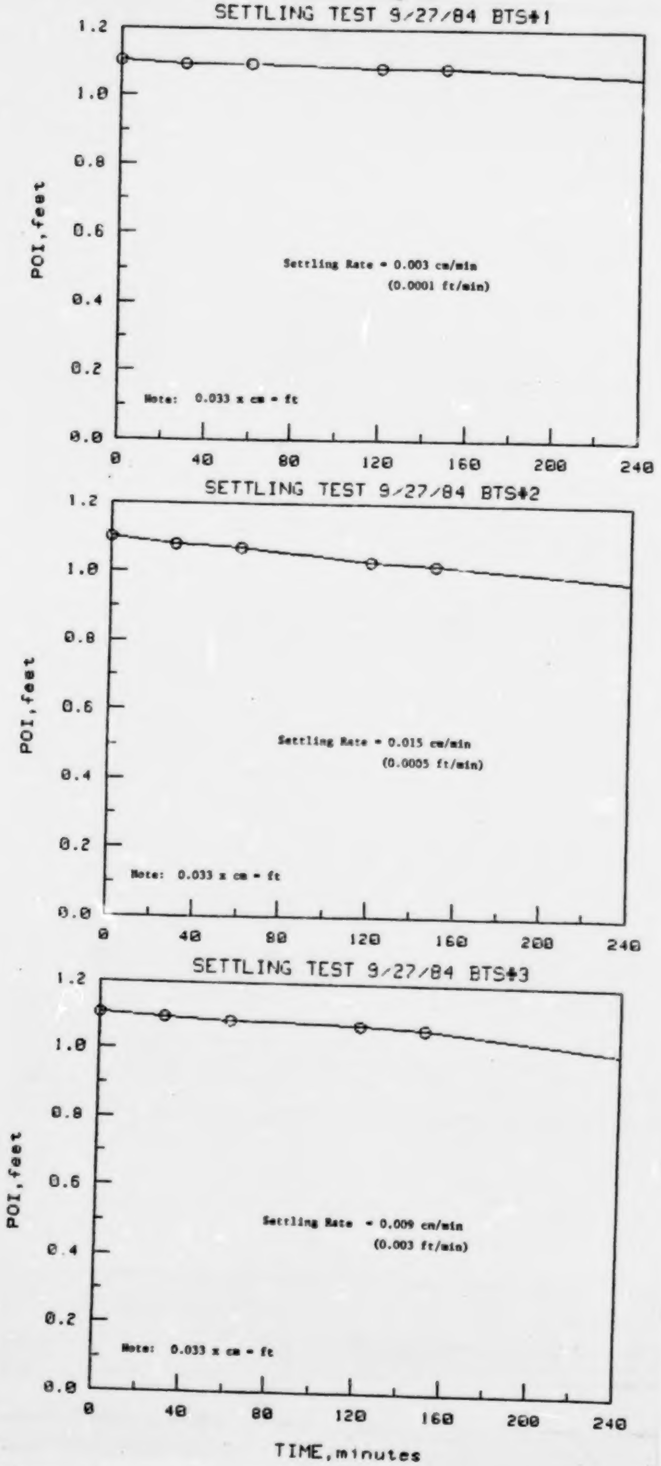


Figure C-3. Clarification Settling Tests (9/27/84).

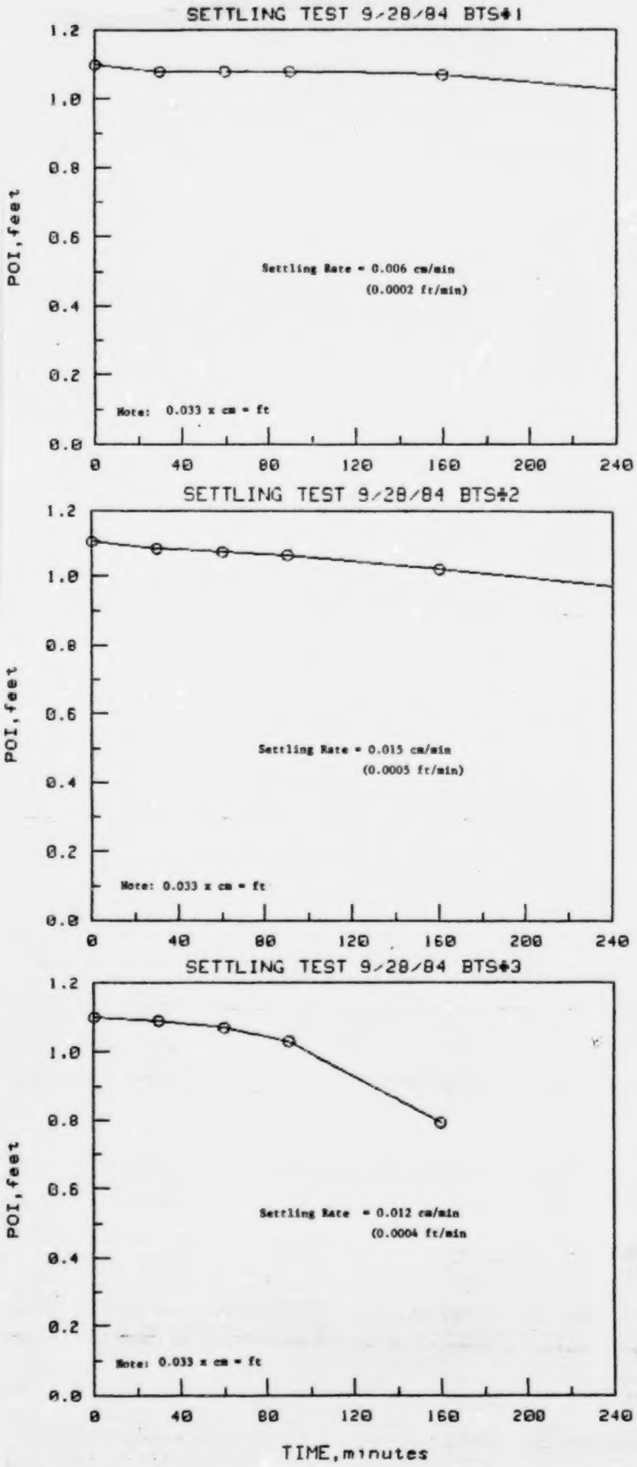
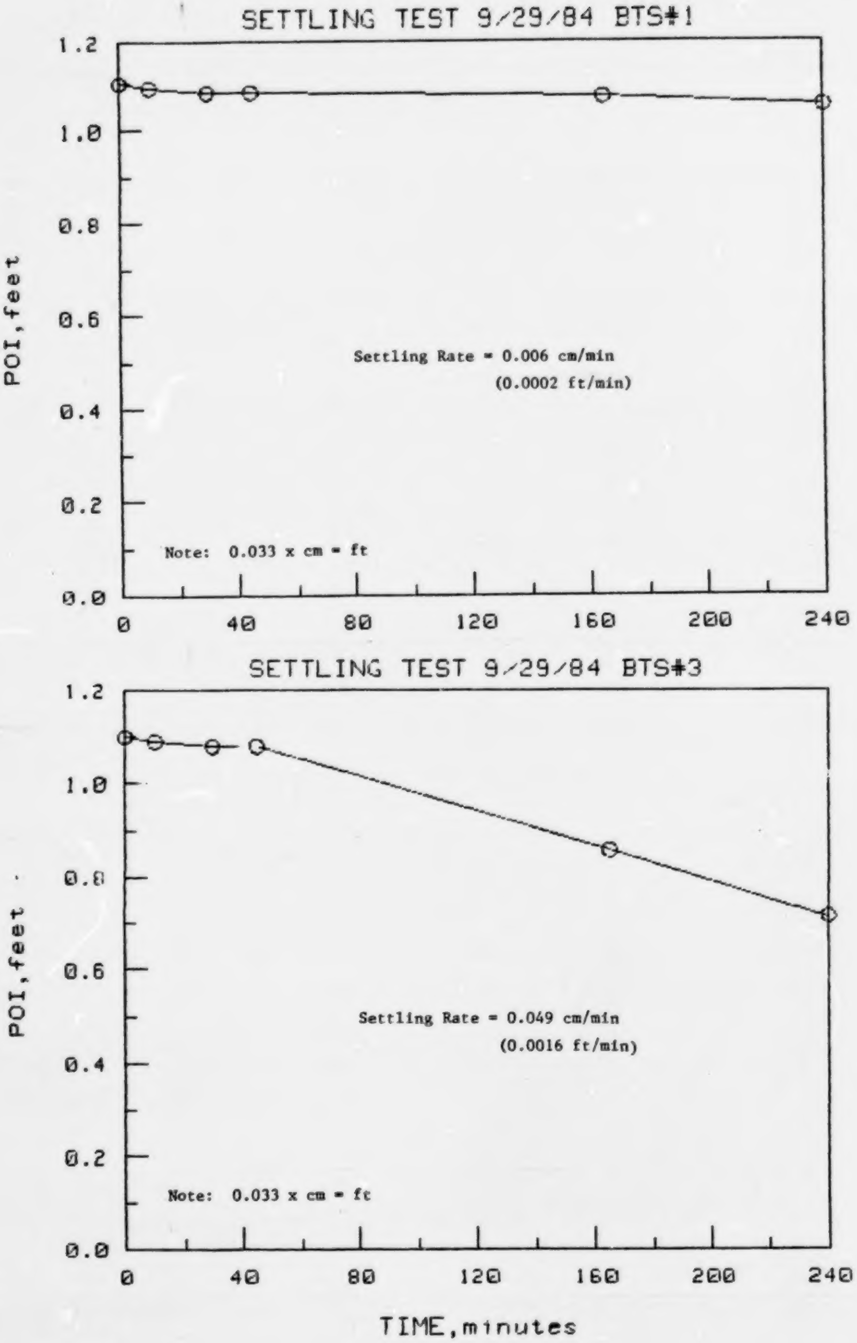


Figure C-4. Clarification Settling Tests (9/28/84).


SETTLING TEST 9/29/84 BTS#1

Settling Rate = 0.006 cm/min (0.0002 ft/min)

Note: 0.033 x cm = ft

SETTLING TEST 9/29/84 BTS#3

Settling Rate = 0.049 cm/min (0.0016 ft/min)

Note: 0.033 x cm = ft

Figure C-5. Clarification Settling Tests (9/29/84).

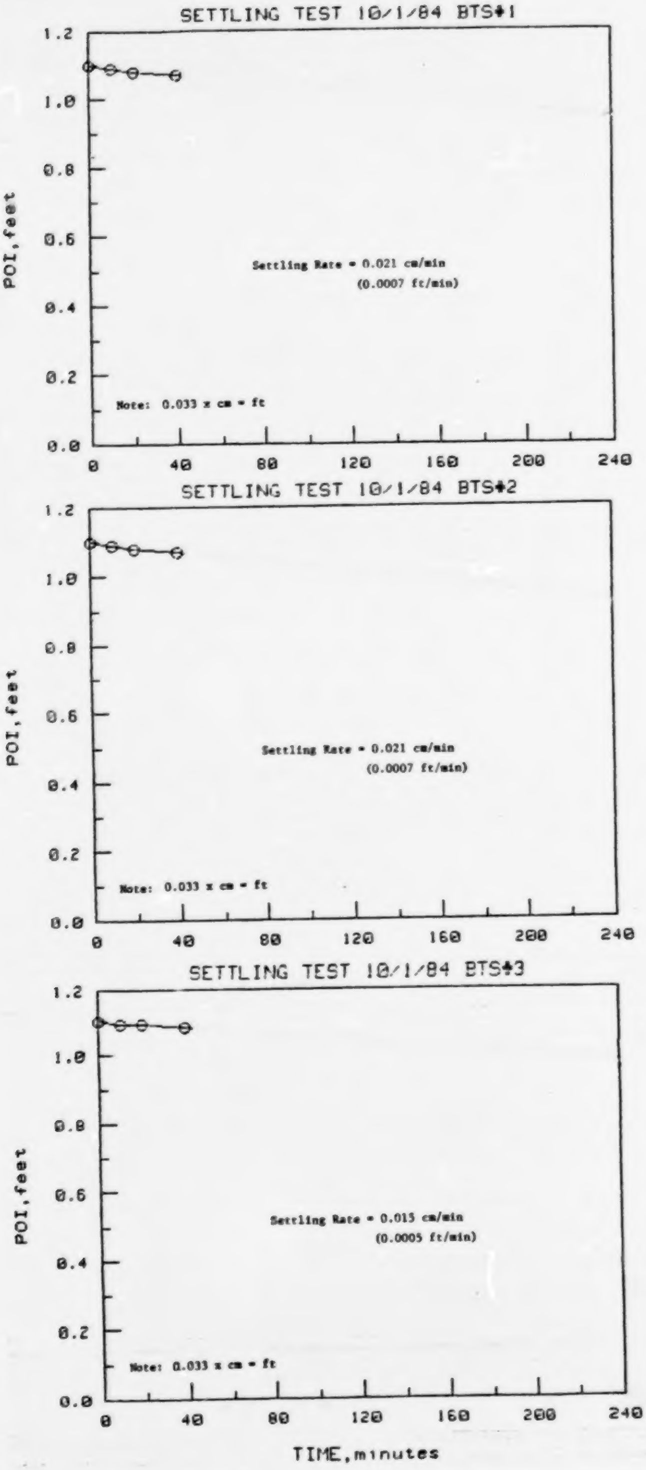


Figure C-6. Clarification Settling Tests (10/1/84).

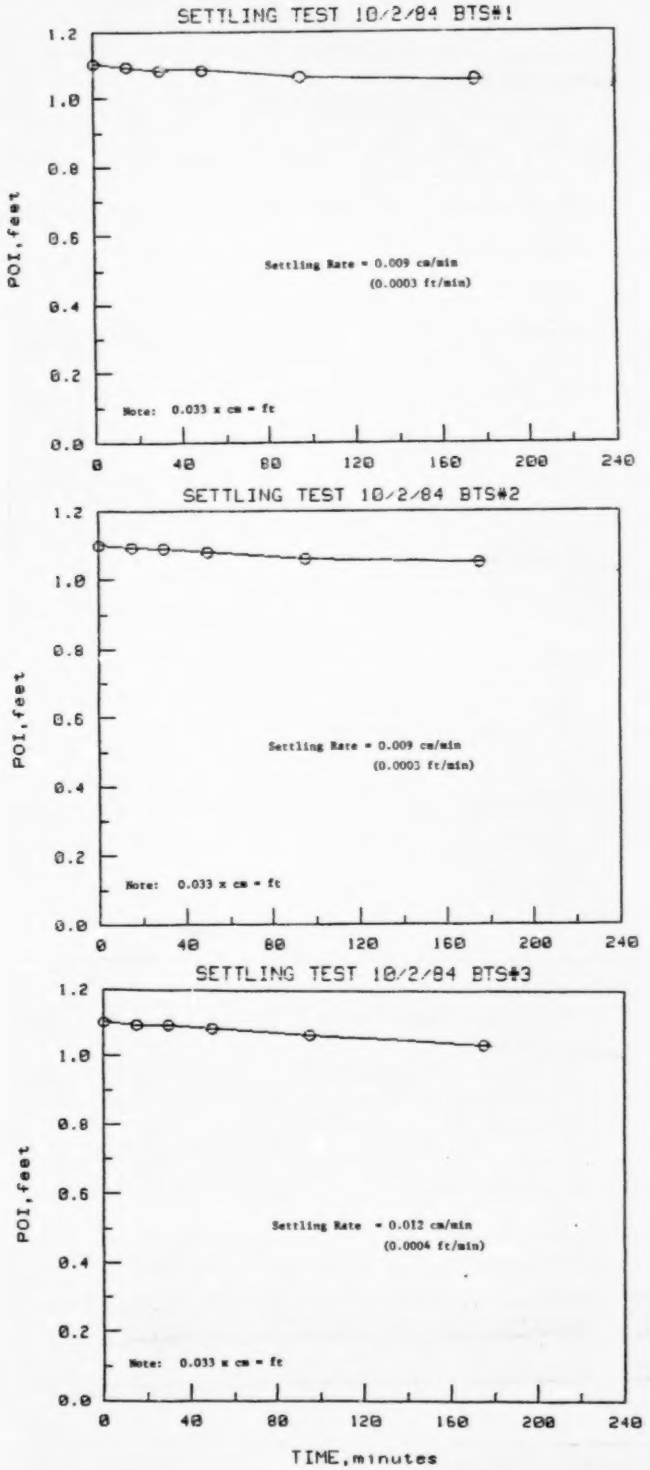


Figure C-7. Clarification Settling Tests (10/2/84).

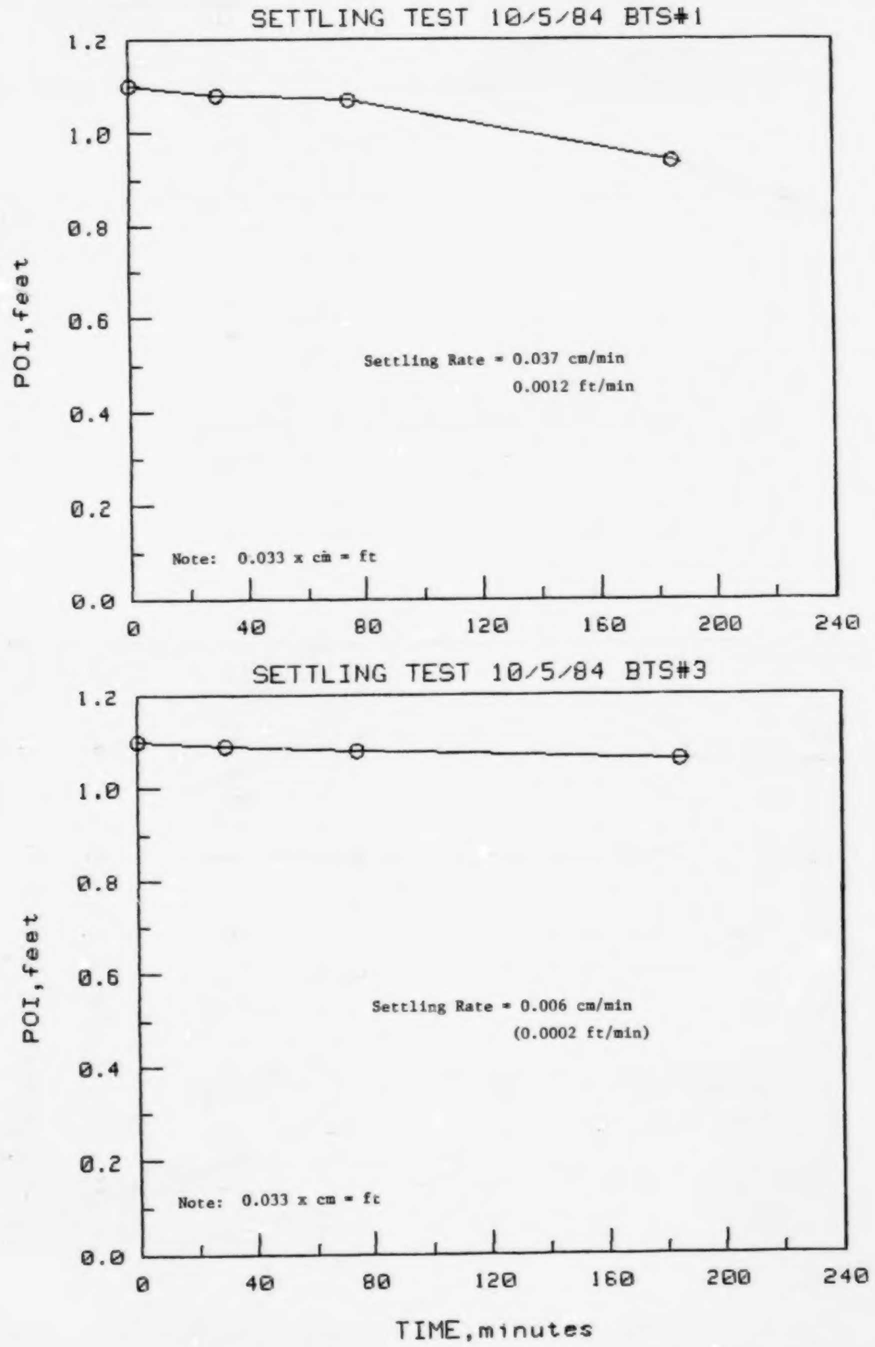


Figure C-8. Clarification Settling Tests (10/5/84).

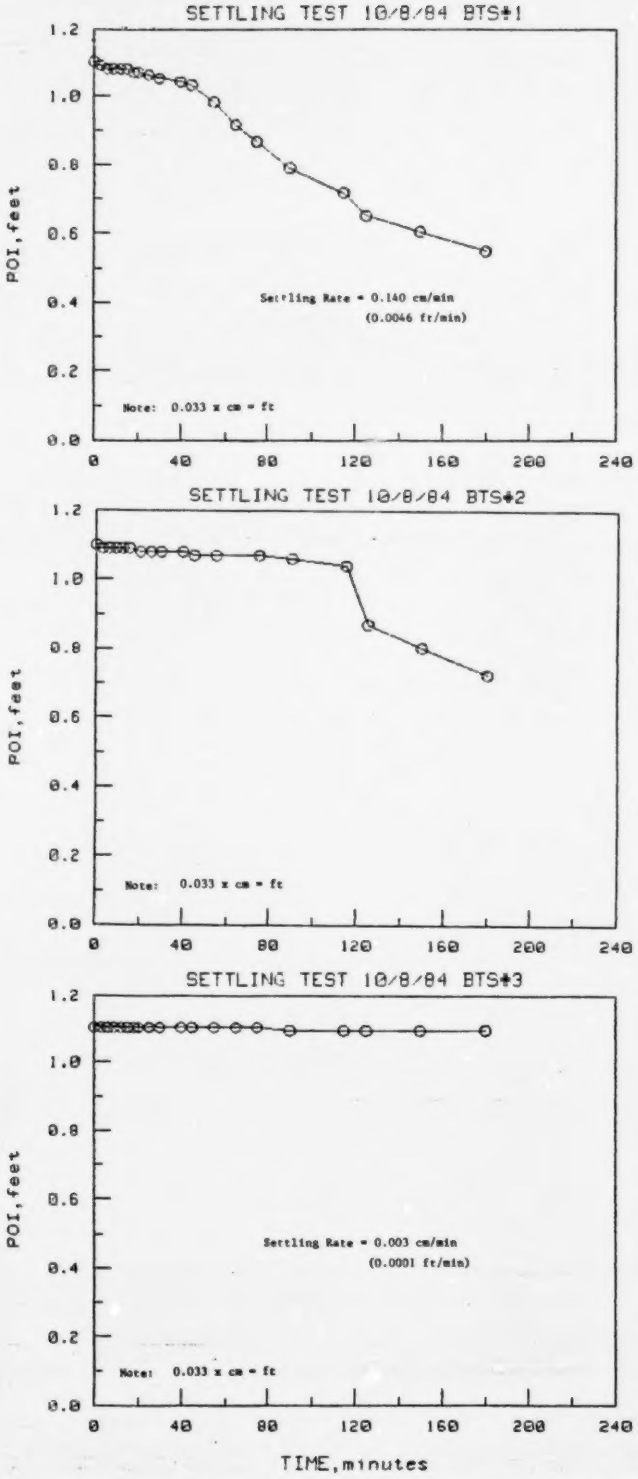


Figure C-9. Clarification Settling Tests (10/8/84).

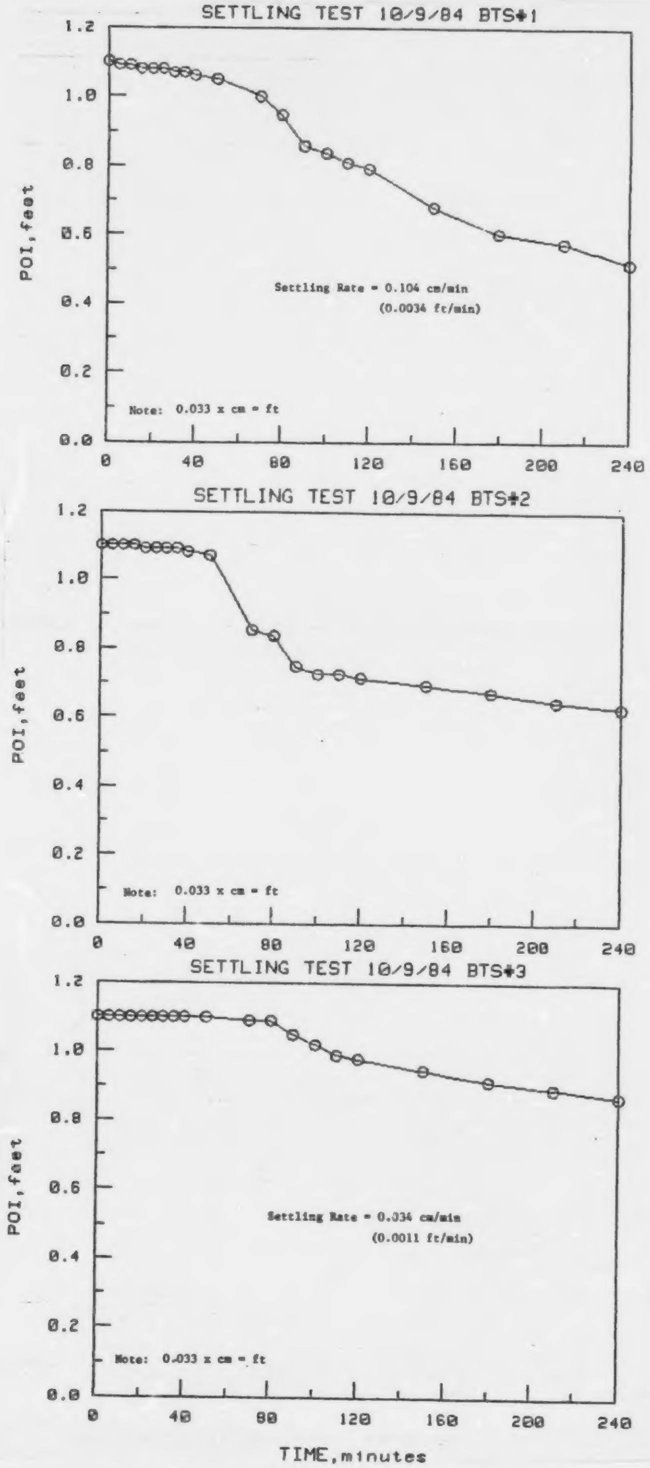


Figure C-10. Clarification Settling Tests (10/9/84).

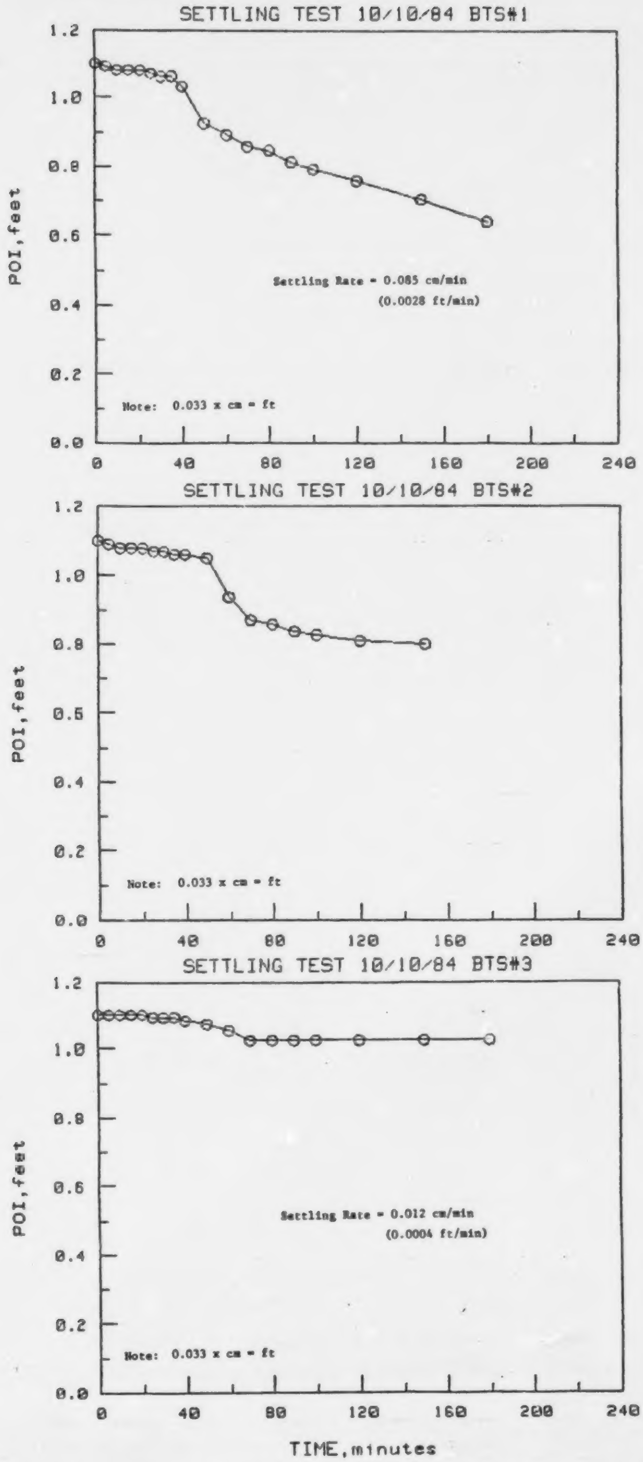


Figure C-11. Clarification Settling Tests (10/10/84).

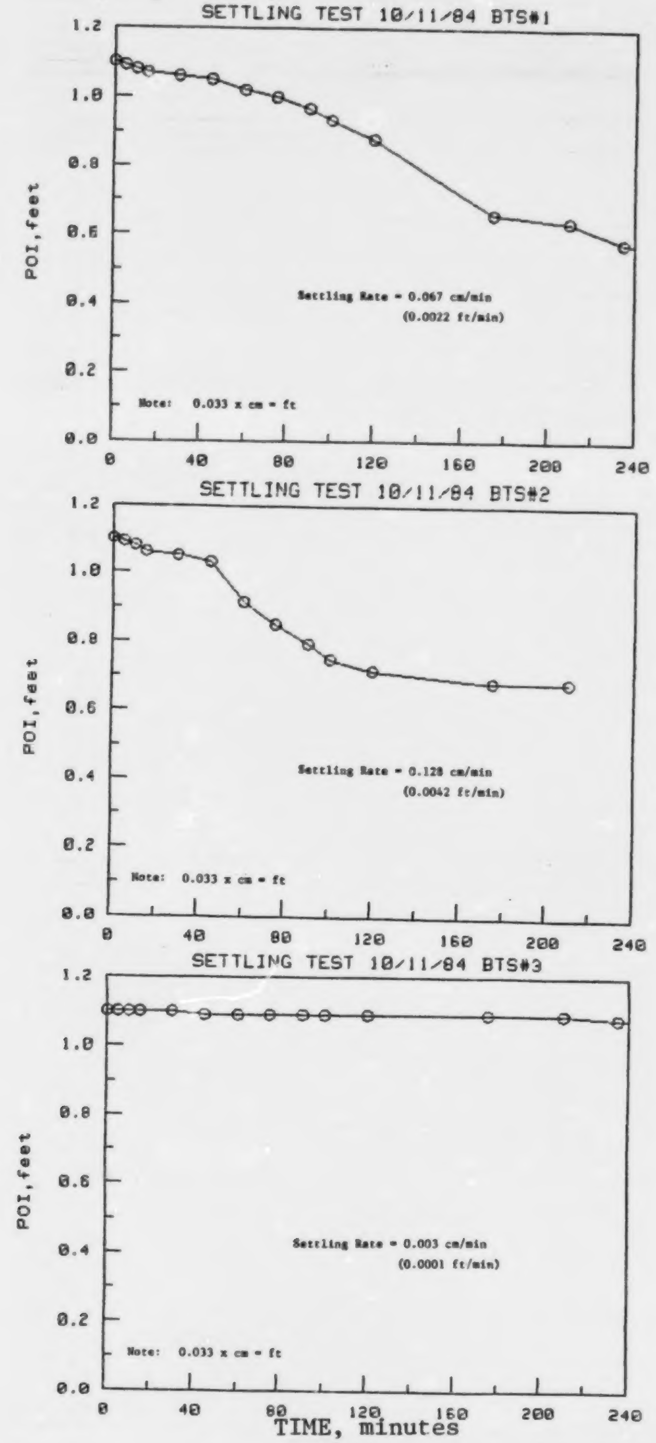


Figure C-12. Clarification Settling Tests (10/11/84).

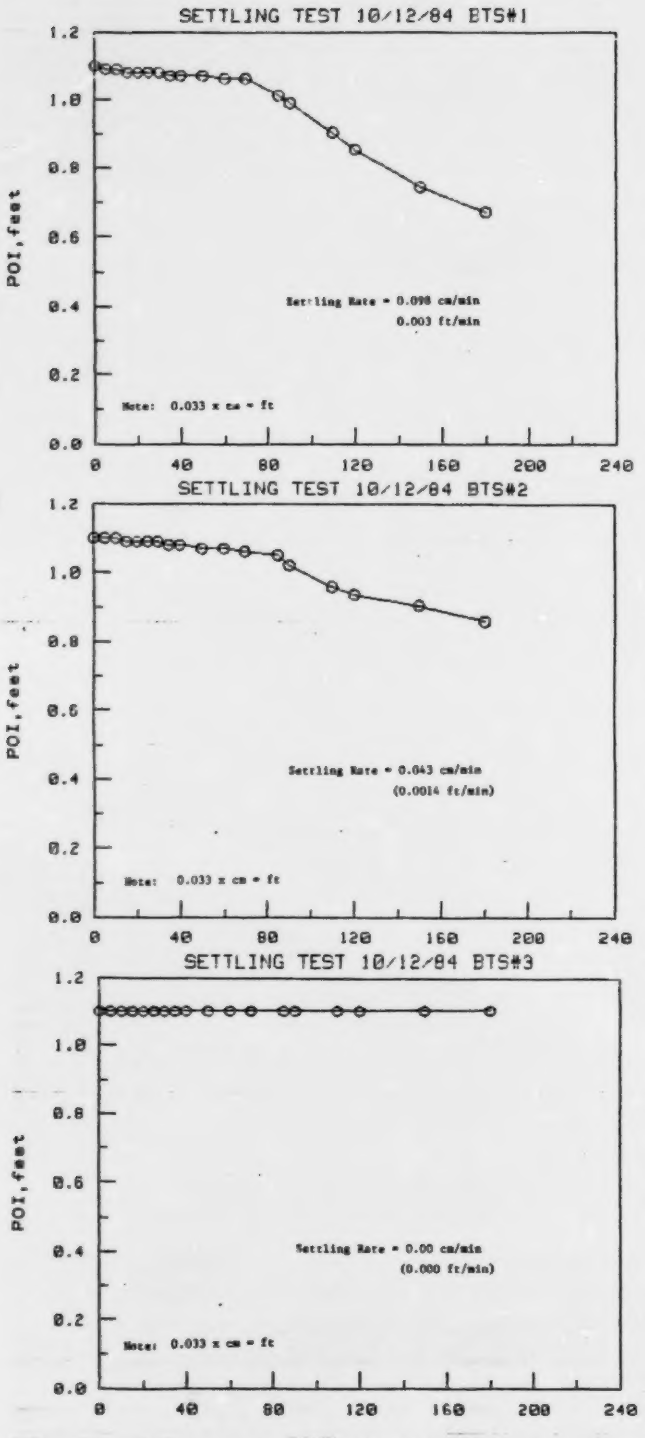
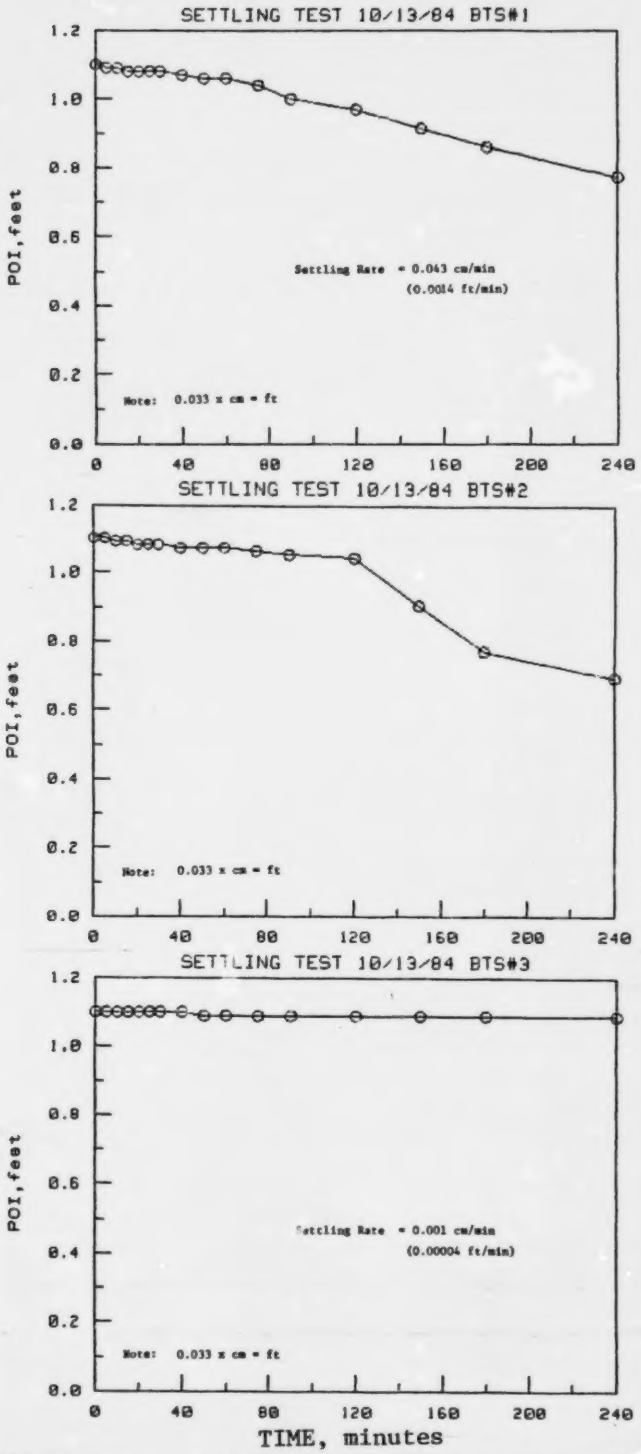


Figure C-13. Clarification Settling Tests (10/12/84).



SETTLING TEST 10/13/84 BTS#1

Settling Rate = 0.043 cm/min
(0.0014 ft/min)

Note: 0.033 x cm = ft

SETTLING TEST 10/13/84 BTS#2

Note: 0.033 x cm = ft

SETTLING TEST 10/13/84 BTS#3

Settling Rate = 0.001 cm/min
(0.00004 ft/min)

Note: 0.033 x cm = ft

Figure C-14. Clarification Settling Tests (10/13/84).

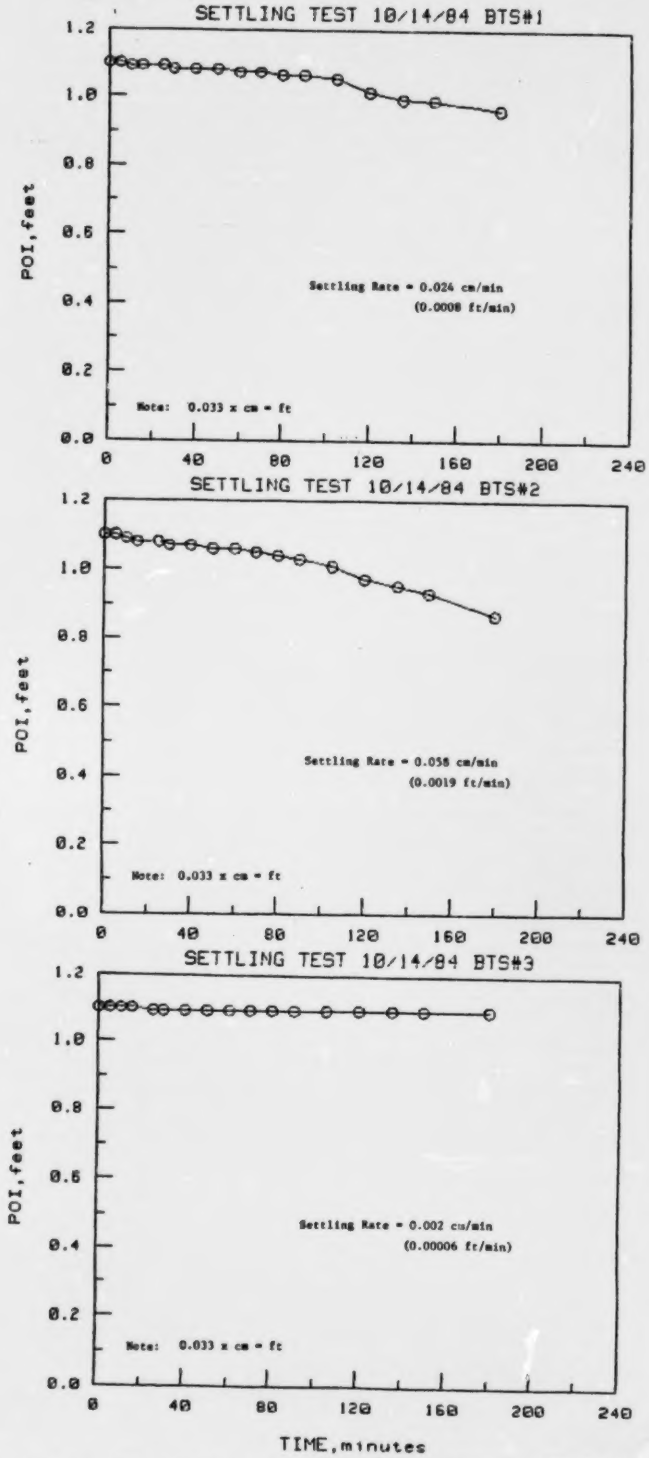


Figure C-15. Clarification Settling Tests (10/14/84).

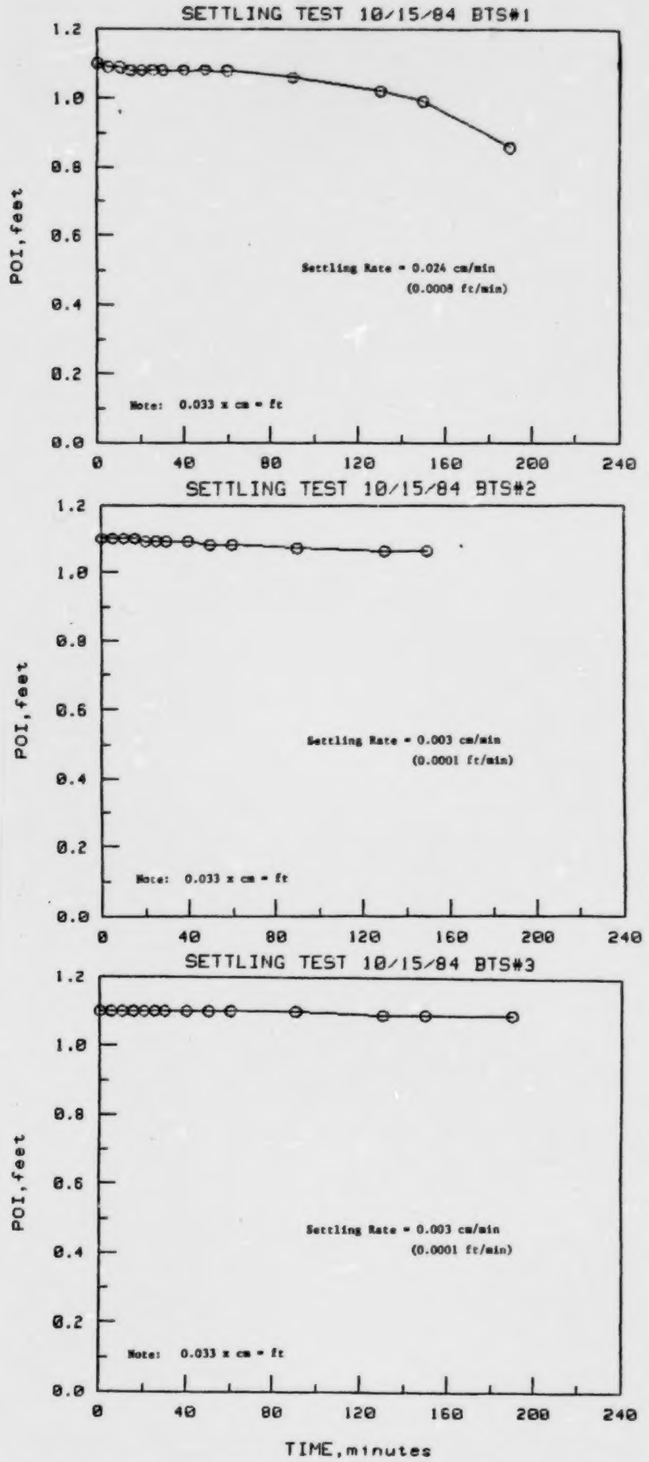


Figure C-16. Clarification Settling Tests (10/15/84).

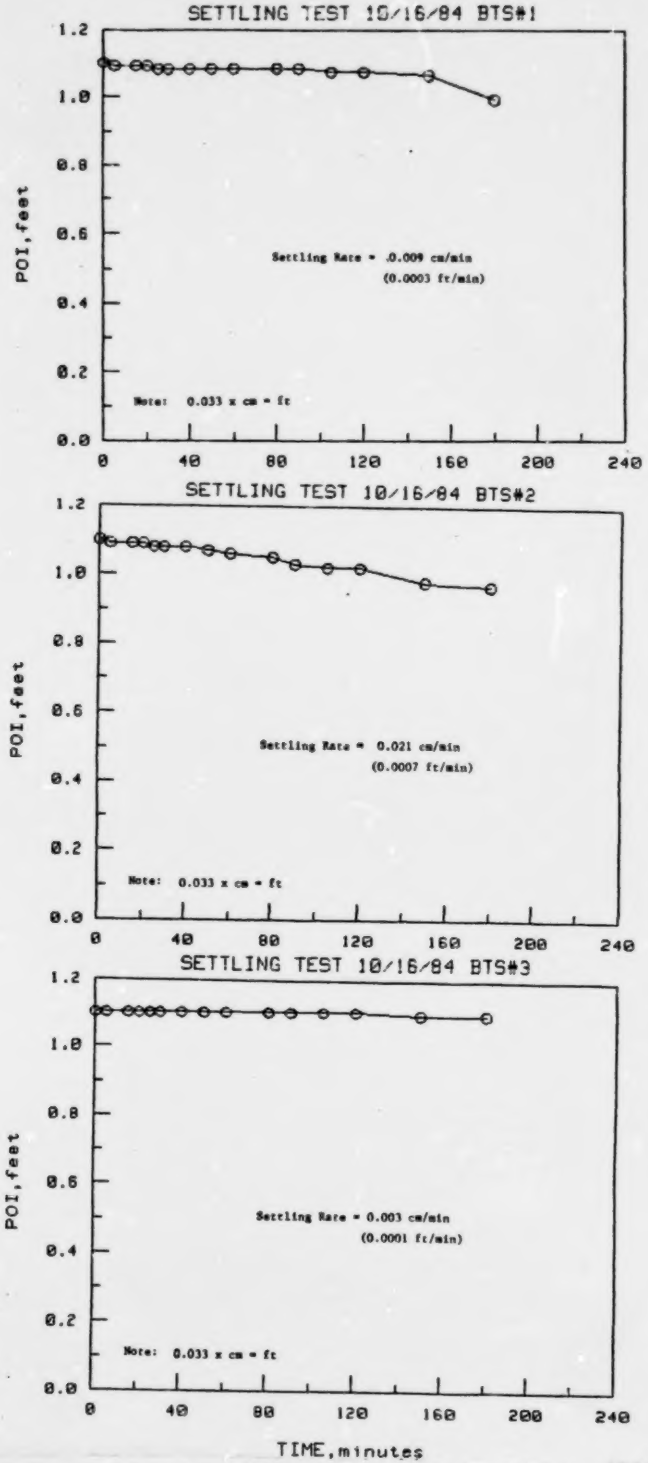


Figure C-17. Clarification Settling Tests (10/16/84).

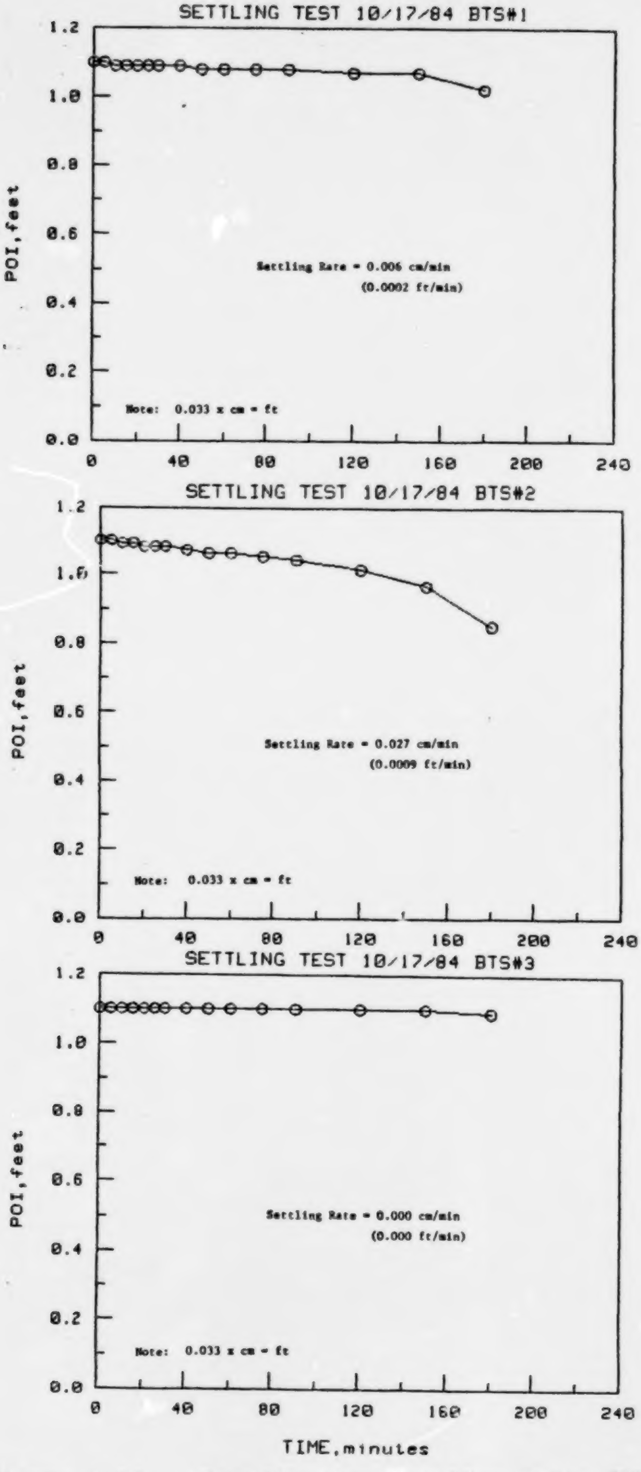


Figure C-18. Clarification Settling Tests (10/17/84).

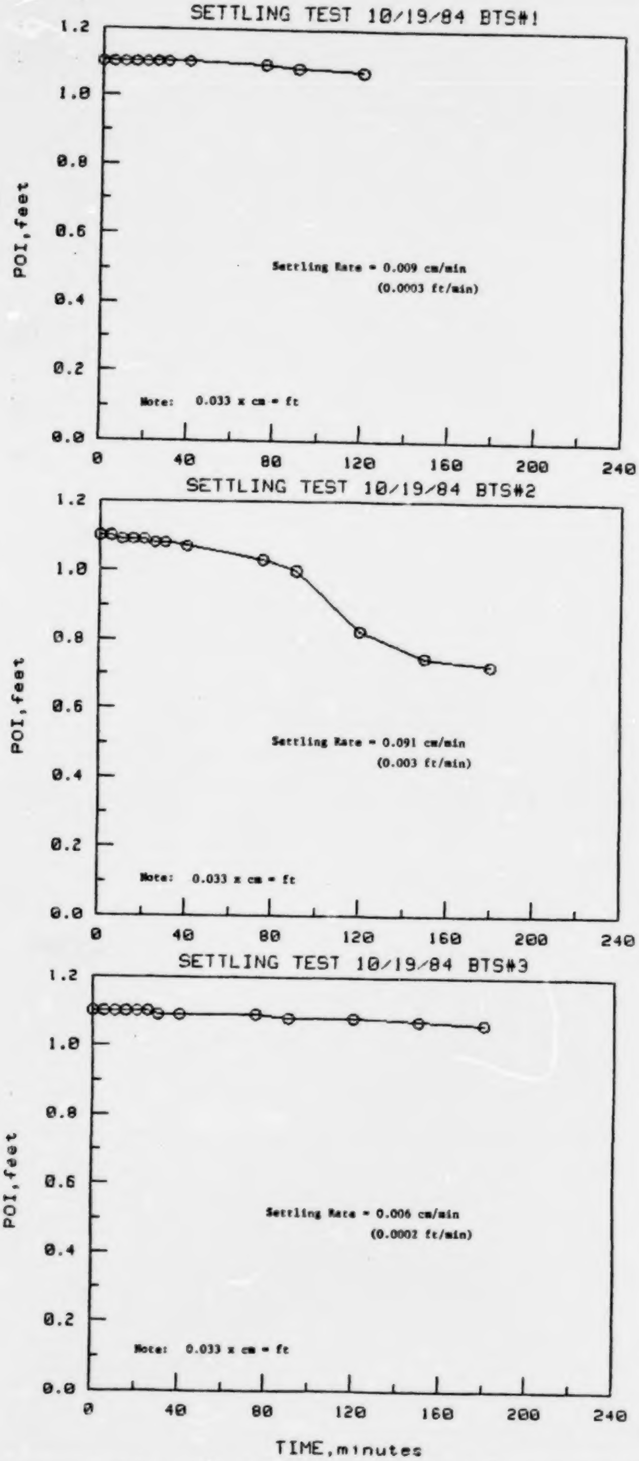


Figure C-19. Clarification Settling Tests (10/19/84).

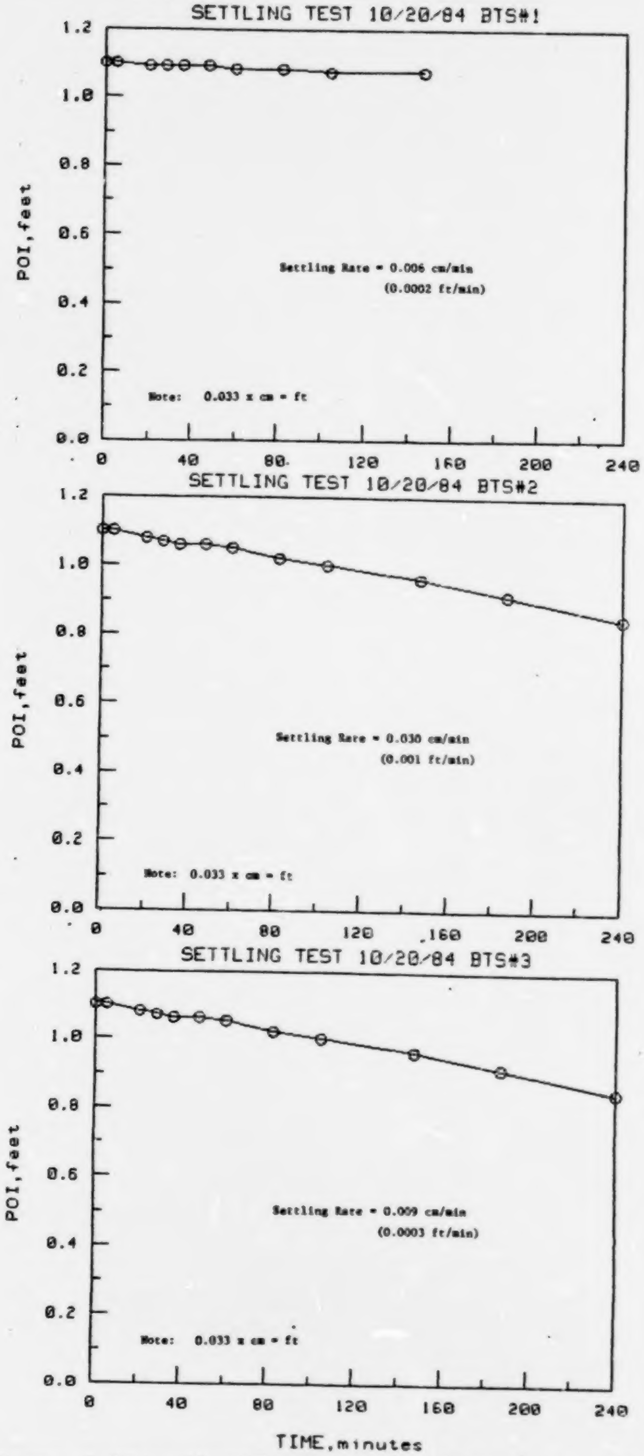


Figure C-20. Clarification Settling Tests (10/20/84).

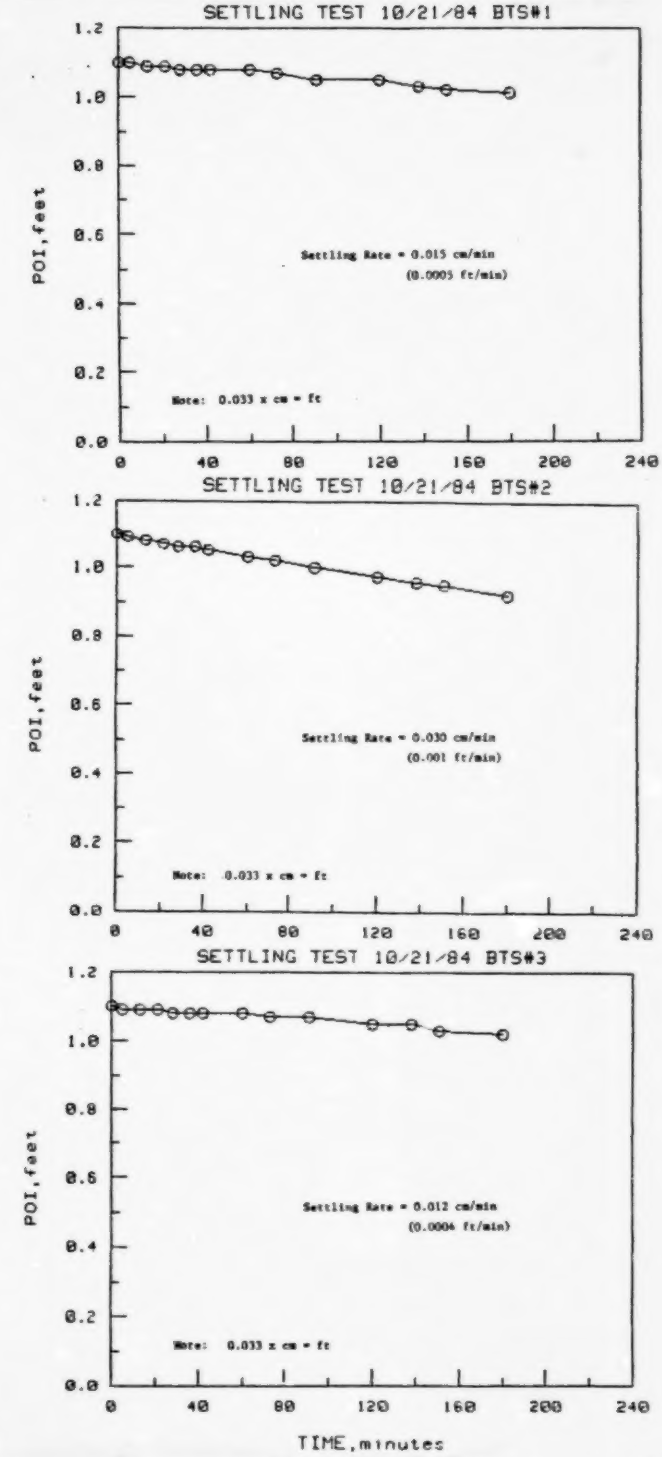


Figure C-21. Clarification Settling Tests (10/21/84).

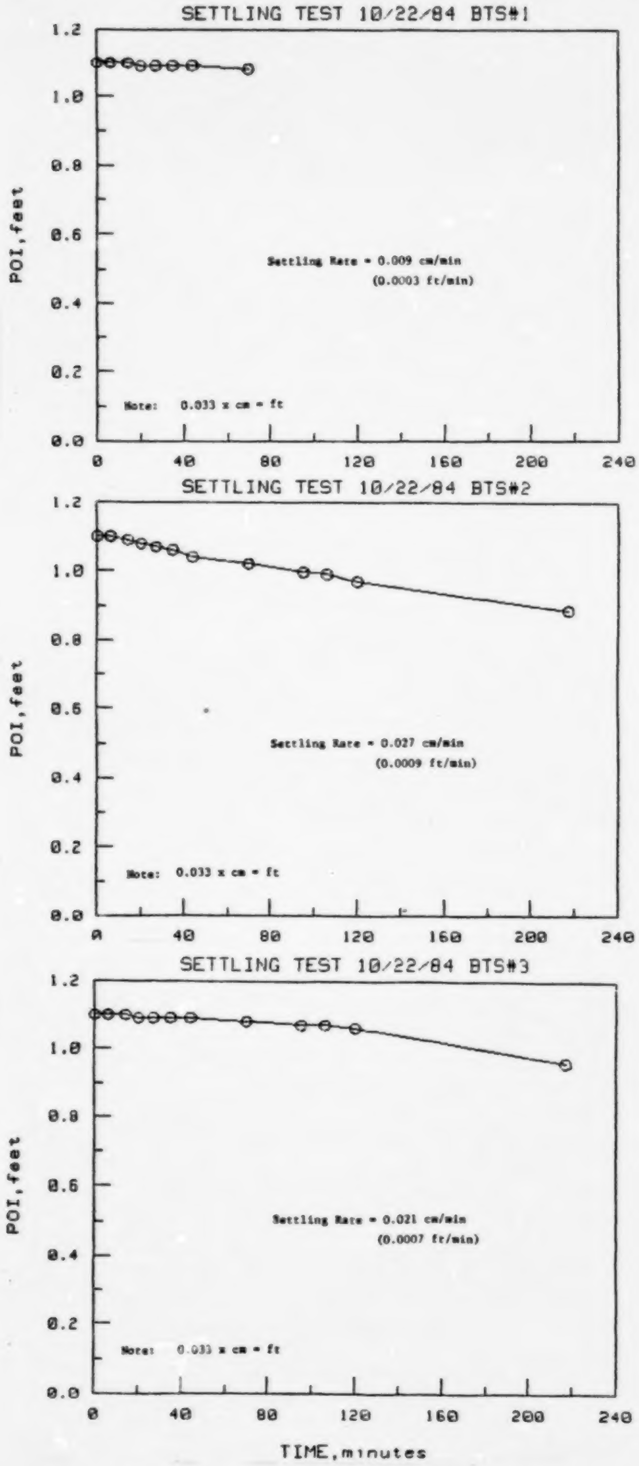


Figure C-22. Clarification Settling Tests (10/22/84).

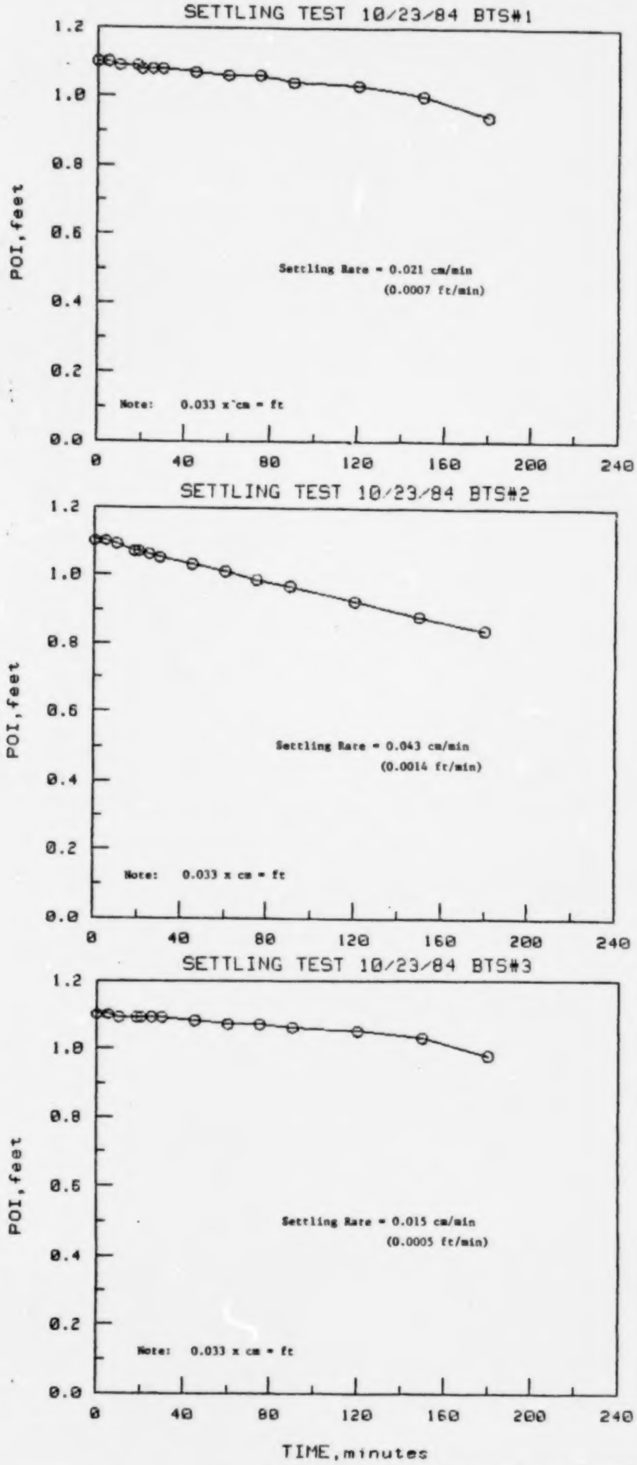


Figure C-23. Clarification Settling Tests (10/23/84).

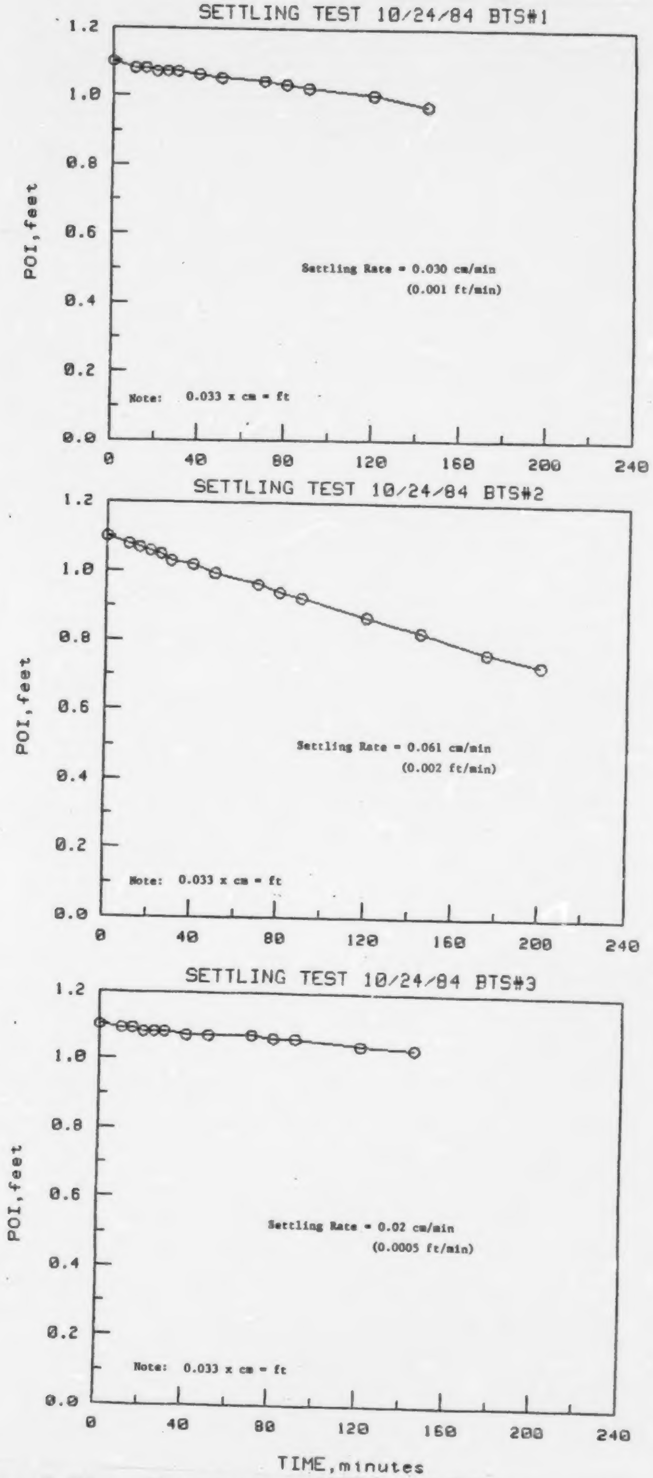


Figure C-24. Clarification Settling Tests (10/24/84).

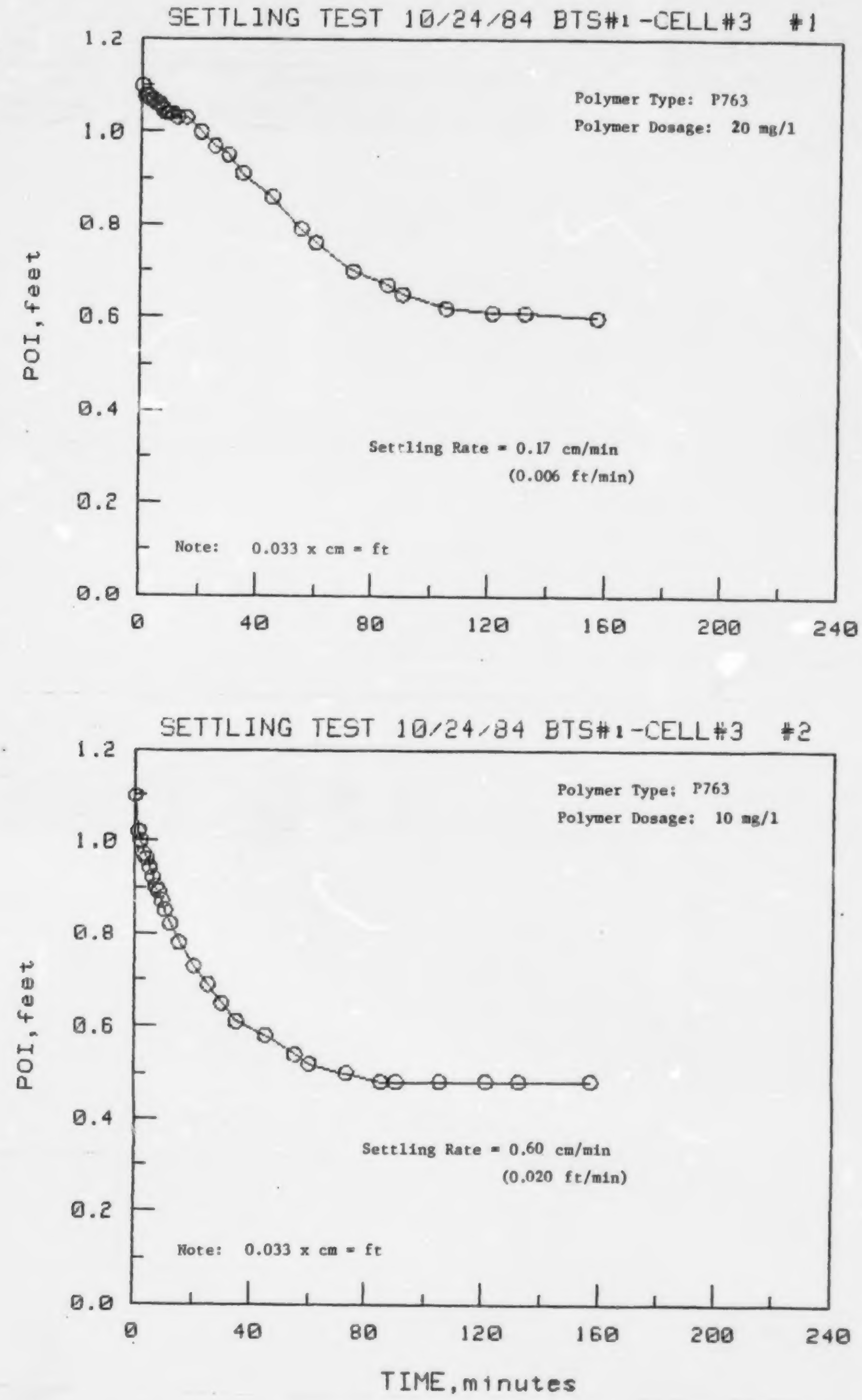


Figure C-25. BTS-1 Clarification Settling Tests with Chemicals (10/24/84).

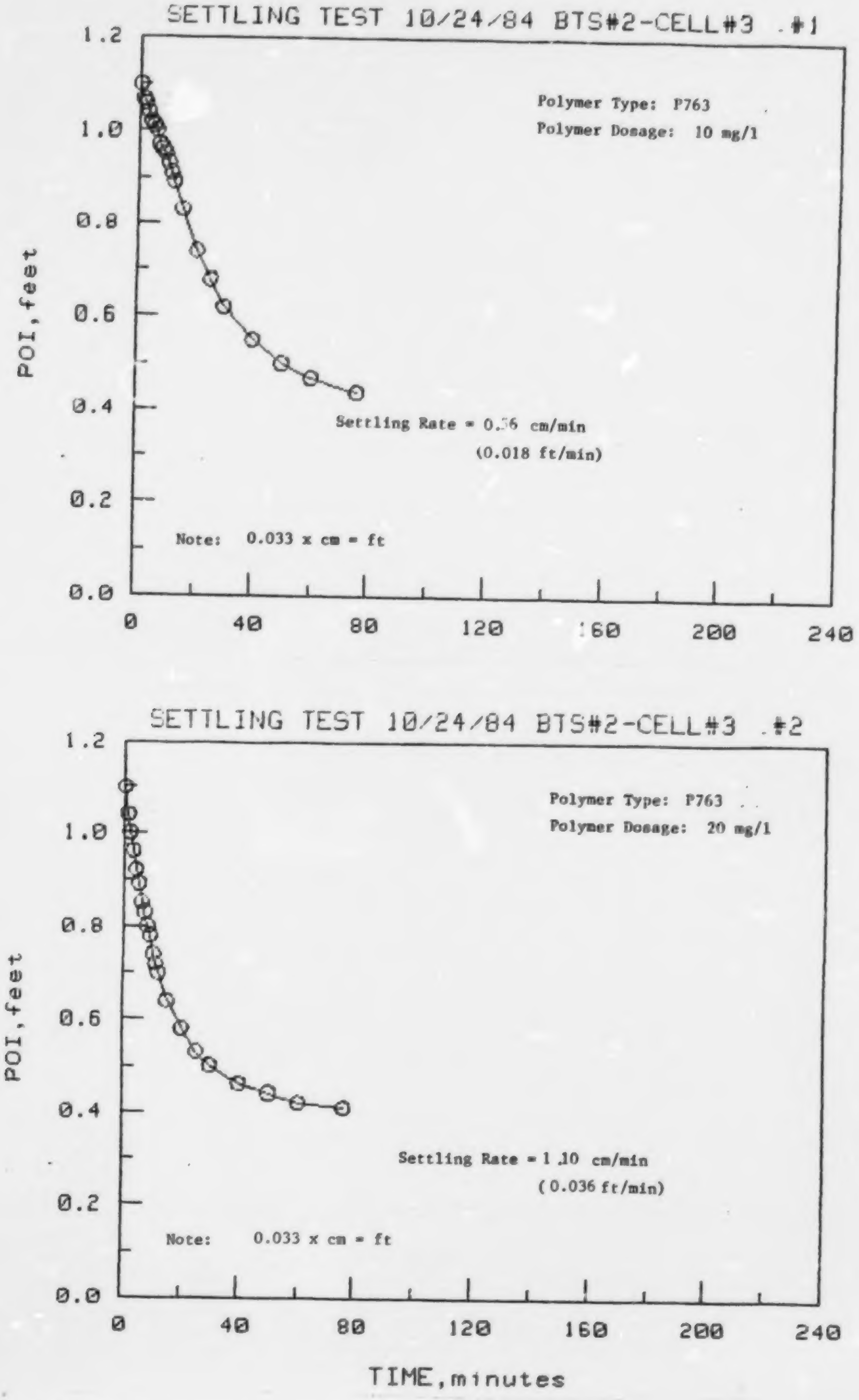


Figure C-26. BTS-2 Clarification Settling Tests with Chemicals (10/24/84).

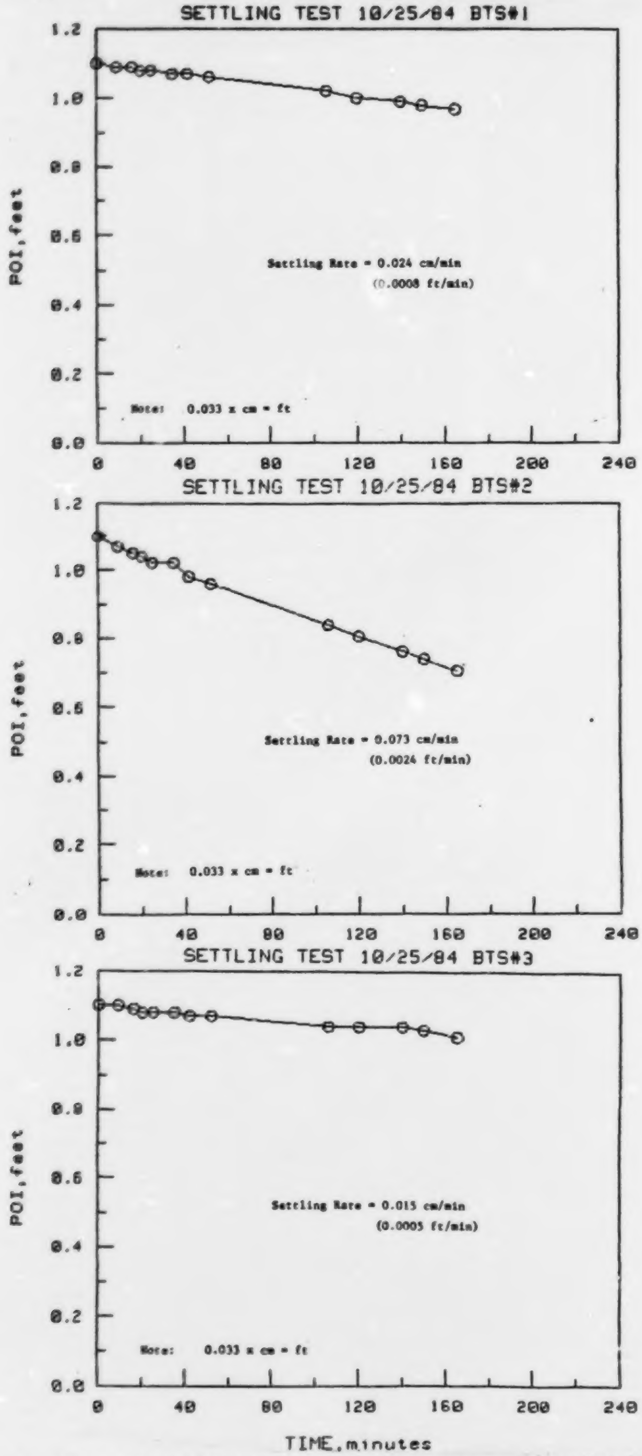


Figure C-27. Clarification Settling Tests (10/25/84).

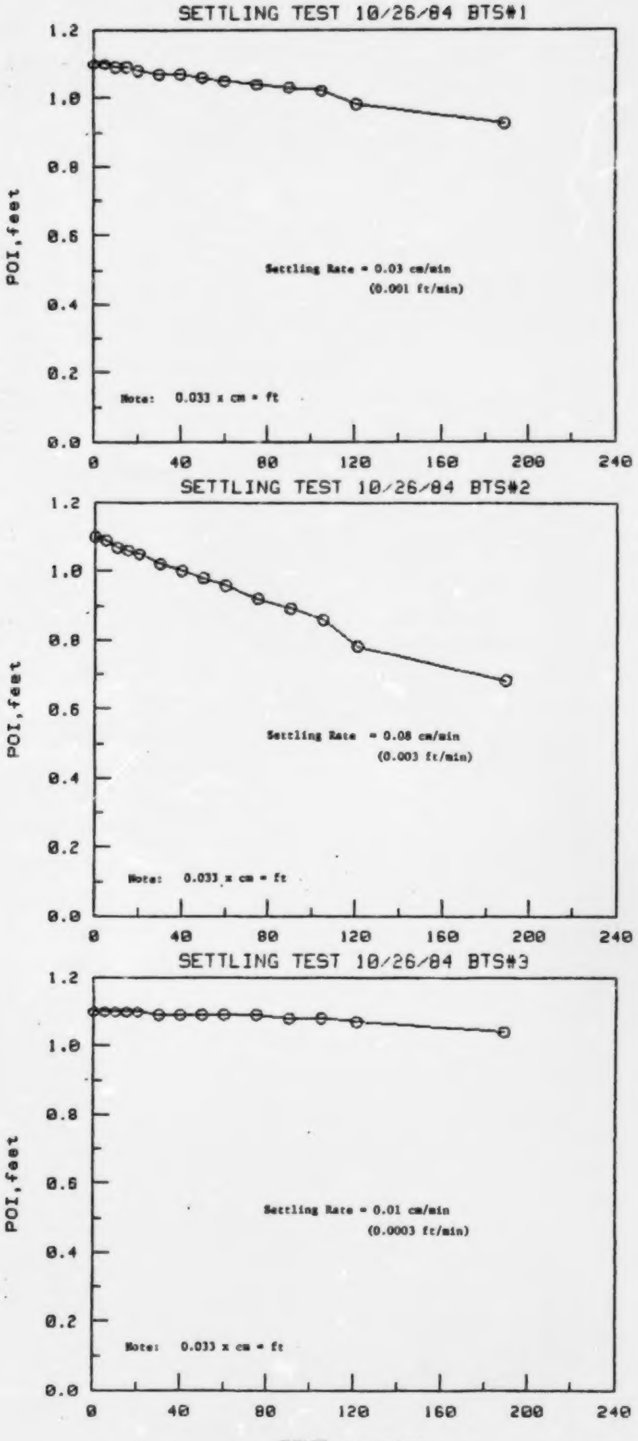


Figure C-28. Clarification Settling Tests (10/26/84).

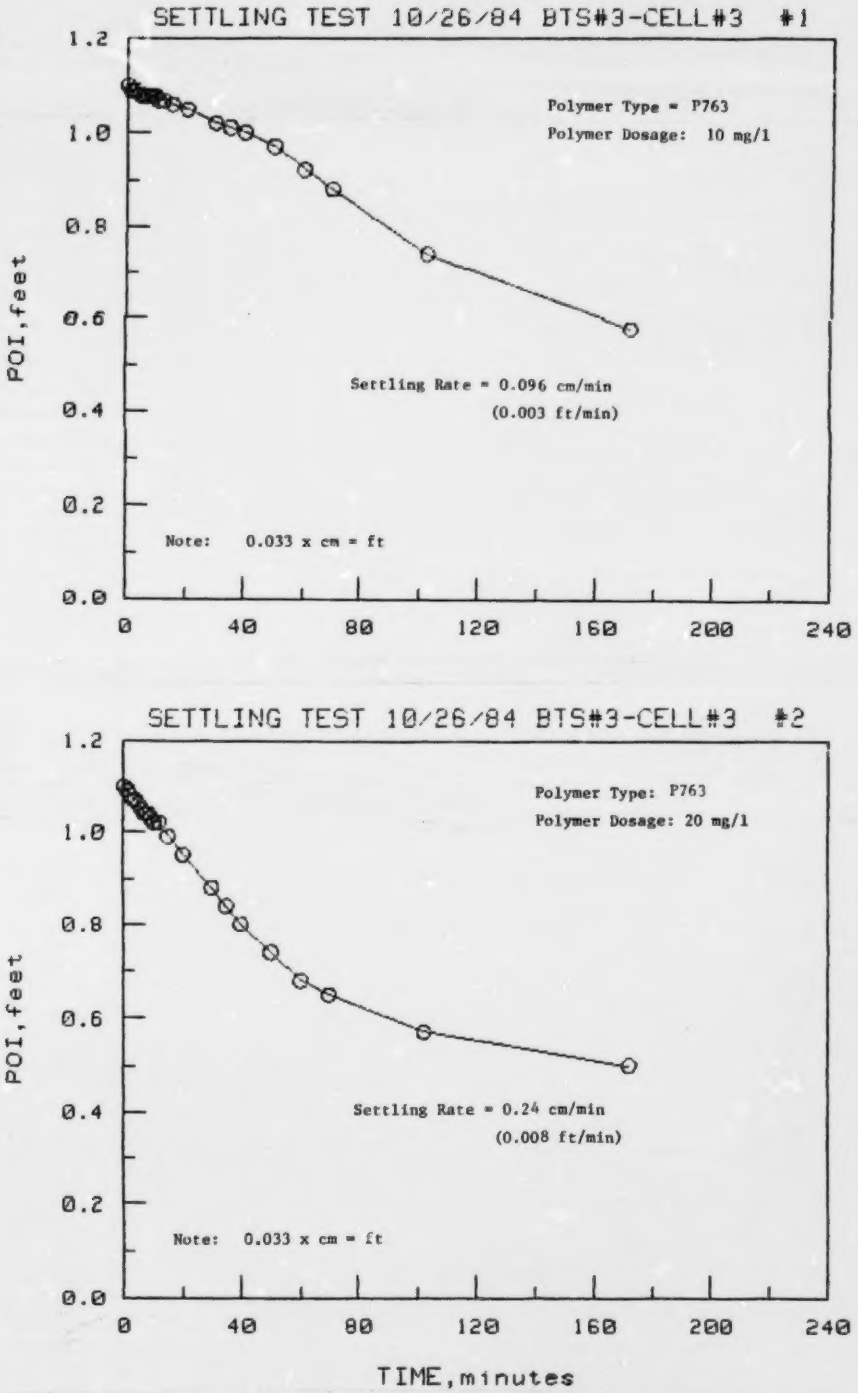


Figure C-29. BTS-3 Clarification Settling Tests with Chemicals (10/26/84).

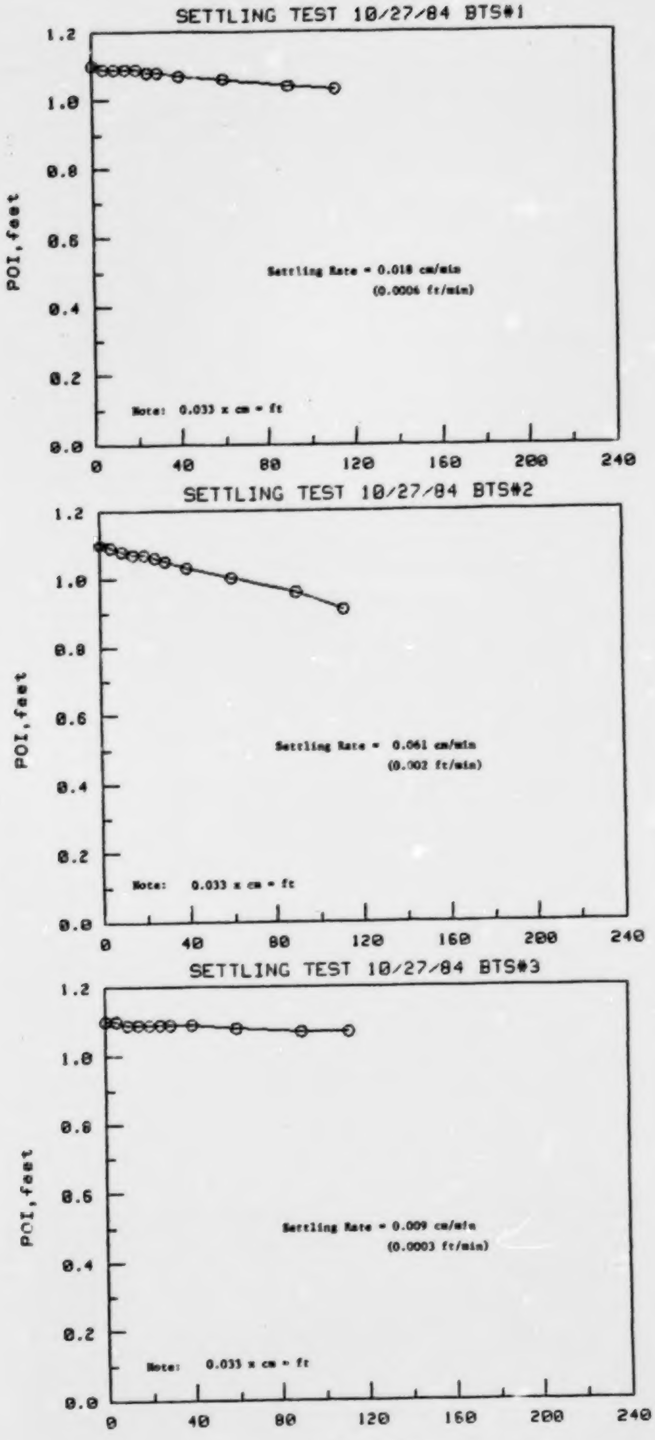


Figure C-30. Clarification Settling Tests (10/27/84).

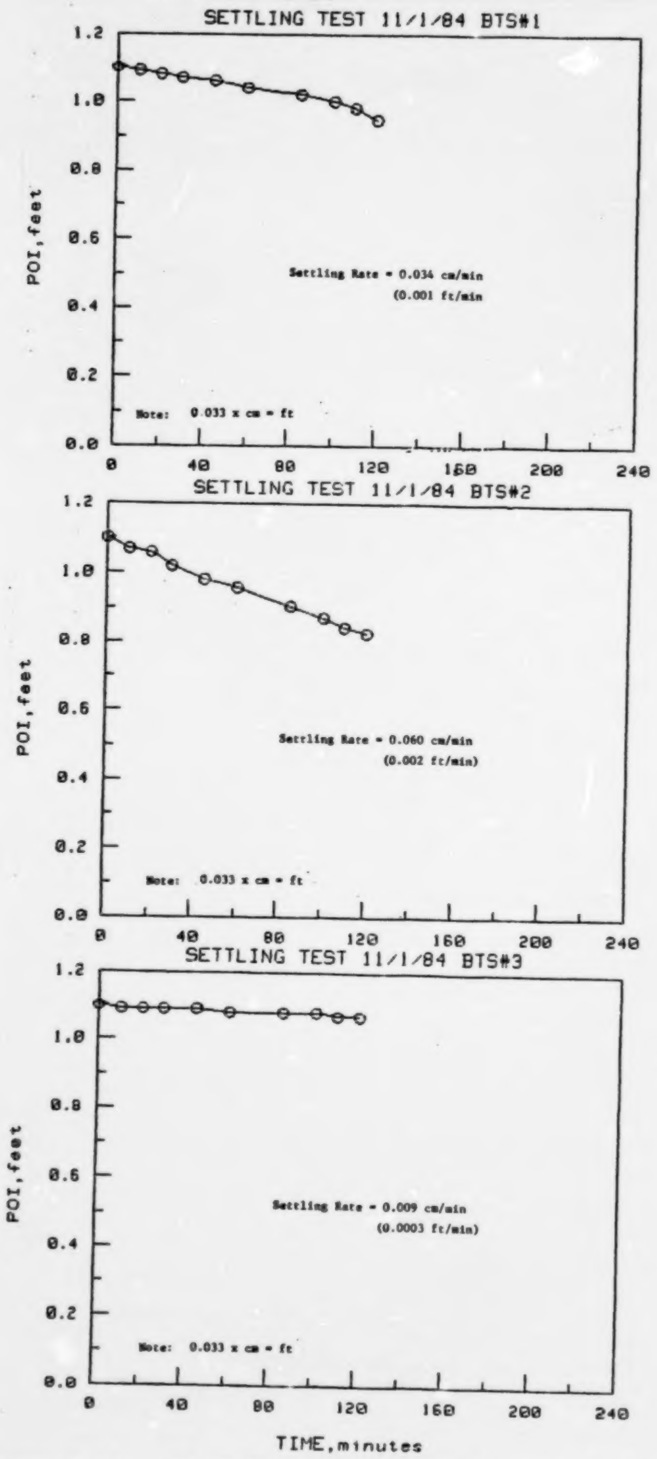


Figure C-31. Clarification Settling Tests (11/1/84)

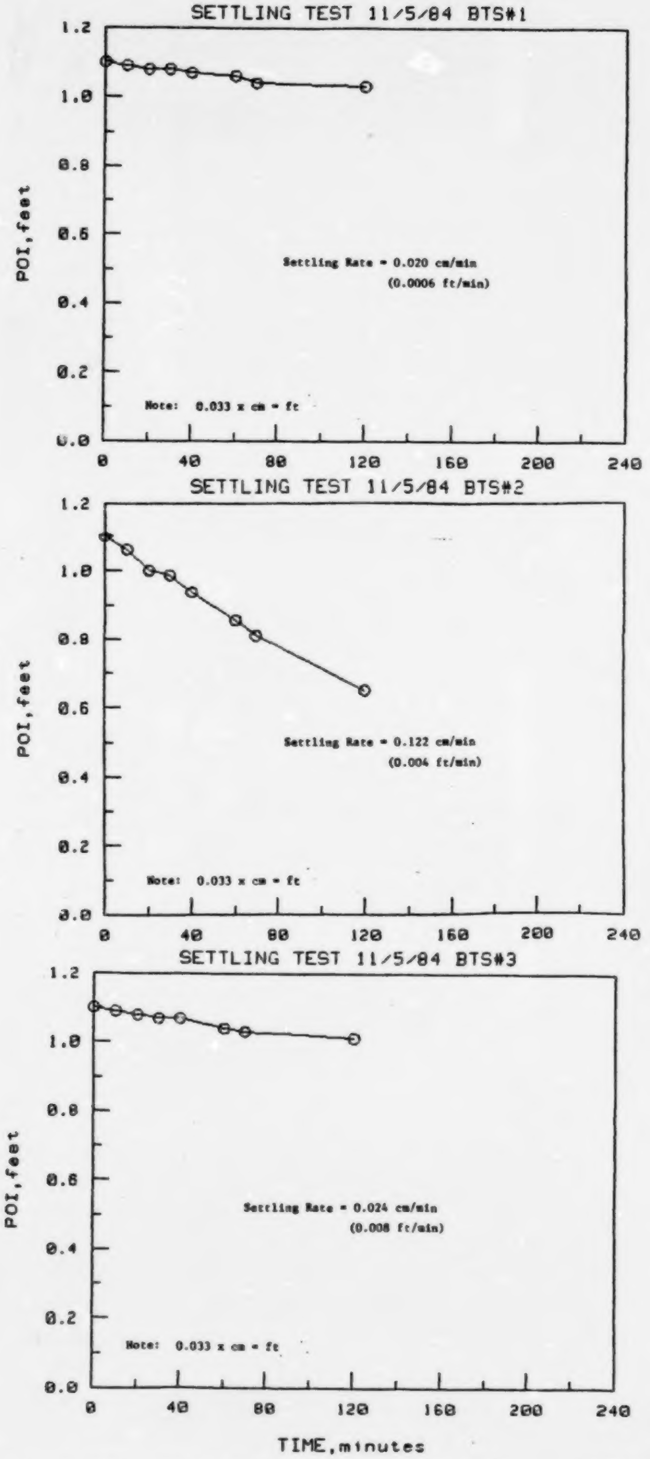


Figure C-32. Clarification Settling Tests (11/5/84).

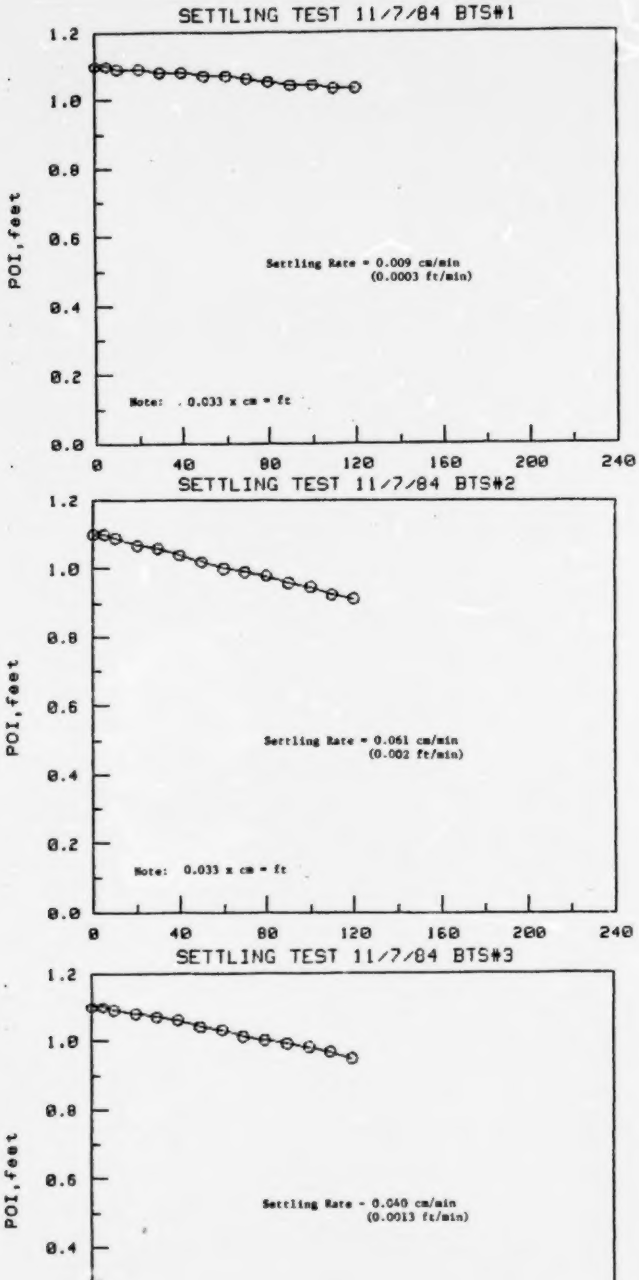


Figure C-33. Clarification Settling Tests (11/7/84)

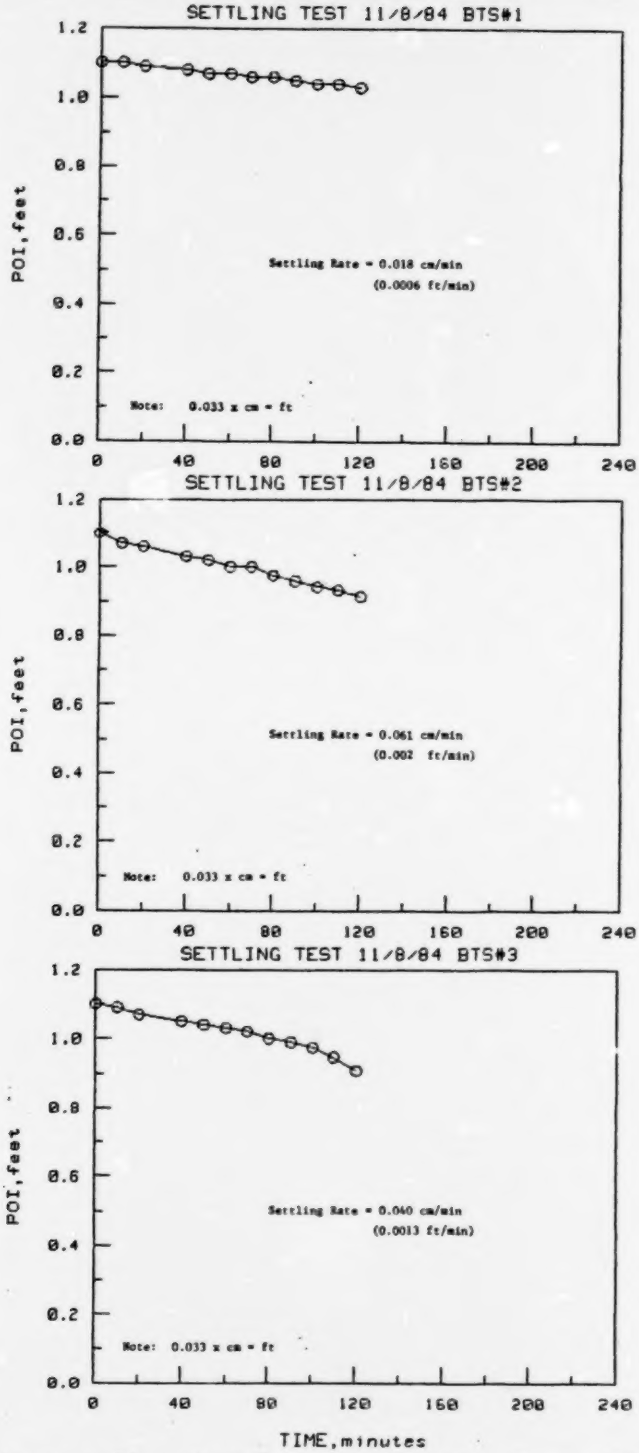


Figure C-34. Clarification Settling Tests (11/8/84).

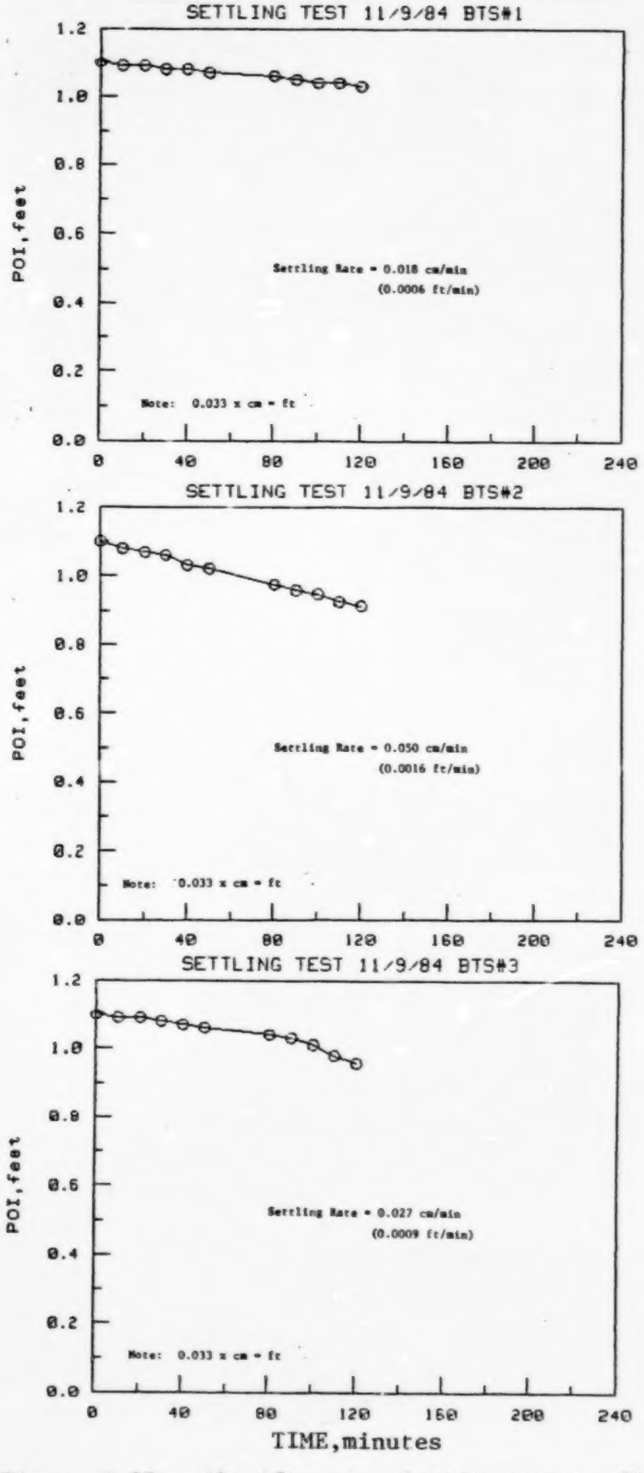


Figure C-35. Clarification Settling Tests (11/9/84).

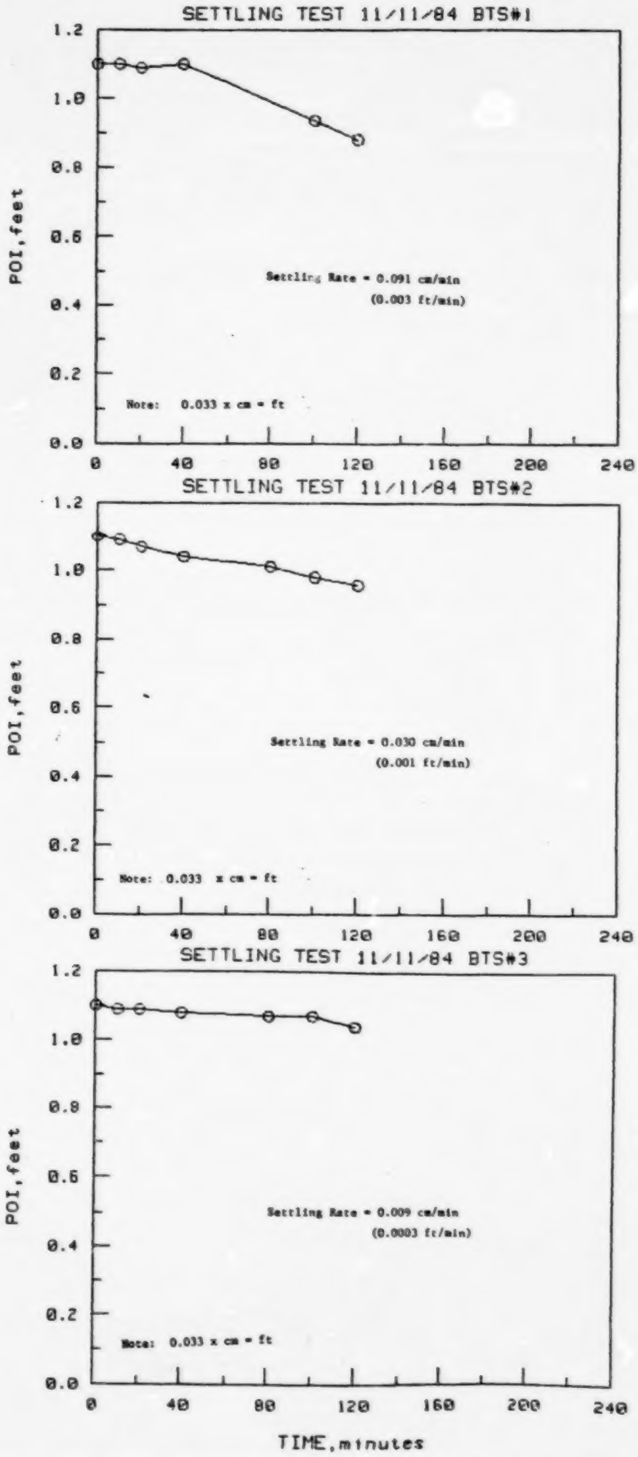


Figure C-36. Clarification Settling Tests (11/11/84)

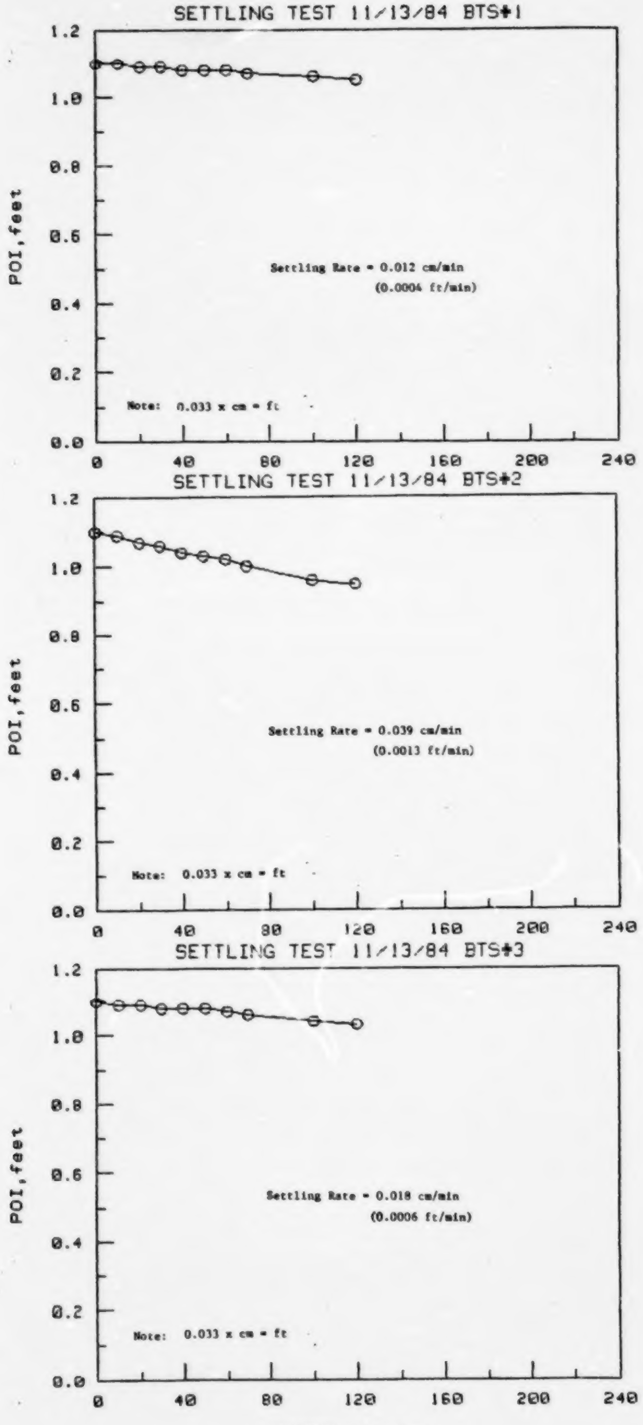


Figure C-37. Clarification Settling Tests (11/13/84)

TABLE C-1. FULL-SCALE BIOLOGICAL TREATMENT PLANT DATA (GENERAL CHARACTERISTICS)

Day	Date	Plant Influent (B)					Plant Effluent (J)		
		pH	Temp. (°C)	TSS (mg/1)	VSS (mg/1)	Chloride (mg/1)	pH	Temp. (°C)	TSS (mg/1)
1	09/07/84	10.0	- *	1300	628	1350	-	-	-
2	09/08/84	9.9	28	640	530	1340	7.8	34	72
3	09/09/84	9.9	25	559	420	1550	7.7	36	124
4	09/10/84	10.1	28	820	630	1700	7.7	-	372
5	09/11/84	10.4	28.5	612	440	1490	7.8	37	1560
6	09/12/84	9.5	-	470	325	1500	7.8	-	715
7	09/13/84	8.4	31	695	535	1200	7.7	38	600
8	09/14/84	9.8	31	760	630	1100	7.8	40	980
9	09/15/84	9.6	26	325	235	1300	7.8	38	1470
10	09/16/84	10.1	25	500	340	1500	7.8	37	1080
11	09/17/84	10.0	23.5	555	350	1340	8.2	25	160
12	09/18/84	9.7	23	465	405	-	8.0	22	600
13	09/19/84	10.2	27.5	655	-	-	7.6	24	148
14	09/20/84	10.7	28	840	580	-	7.8	25	65
15	09/21/84	11.2	30	650	-	-	8.2	29	108
16	09/22/84	11.1	27.5	670	-	-	8.3	29	440
17	09/23/84	11.5	28	1020	745	-	8.1	28	204
18	09/24/84	11.4	31	1050	-	1450	8.4	28	164

(continued)

TABLE C-1. (continued)

Day	Date	Plant Influent (B) pH	Temp. (°C)	TSS (mg/l)	VSS (mg/l)	Chloride (mg/l)	Plant Effluent (J) pH	Temp. (°C)	TSS (mg/l)
19	09/25/84	10.2	29.5	590	-	-	8.5	28	122
20	09/26/84	10.1	26.5	1320	-	-	-	-	-
21	09/27/84	10.2	24.5	840	440	1130	-	-	-
22	09/28/84	10.3	26	447	-	-	-	-	-
23	09/29/84	10.5	31	587	440	-	8.6	22	208
24	09/30/84	11.2	26	650	-	-	-	-	-
25	10/01/84	10.0	32	360	240	1440	8.5	22	150
26	10/02/84	9.5	31	590	-	-	-	-	-
27	10/03/84	9.8	31.5	1060	800	1630	8.3	21	145
28	10/04/84	10.4	31	440	-	-	-	-	-
29	10/05/84	10.1	28.5	630	-	-	-	-	-
30	10/06/84	10.2	27	630	-	-	8.5	24	235
31	10/07/84	10.3	25	720	440	1550	8.6	21	200
32	10/08/84	10.4	28	560	-	-	-	-	-
33	10/09/84	10.0	28	890	670	1400	8.4	27	270
34	10/10/84	8.5	26	500	400	1450	8.2	26	260
35	10/11/84	11.6	-	1000	720	-	8.3	27.5	248
36	10/12/84	10.9	-	770	540	1100	8.5	-	335

(continued)

TABLE C-1. (continued)

Day	Date	Plant Influent (B) pH	Plant Influent (B) Temp. (°C)	Plant Influent (B) TSS (mg/l)	Plant Influent (B) VSS (mg/l)	Plant Influent (B) Chloride (mg/l)	Plant Effluent (J) pH	Plant Effluent (J) Temp. (°C)	Plant Effluent (J) TSS (mg/l)
37	10/13/84	9.6	-	560	410	-	8.2	-	295
38	10/14/84	9.8	-	625	435	-	8.3	-	310
39	10/15/84	9.4	-	1180	720	-	8.4	-	400
40	10/16/84	10.2	-	590	400	1180	8.3	-	480
41	10/17/84	11.2	-	790	440	1230	8.0	-	593
42	10/18/84	12.0	-	760	540	-	8.6	-	345
43	10/19/84	8.5	-	620	530	-	8.5	-	320
44	10/20/84	10.7	-	950	640	1400	8.5	-	295
45	10/21/84	10.2	-	740	540	-	8.4	-	300
46	10/22/84	7.3	-	370	280	-	8.6	-	295
47	10/23/84	7.6	-	467	240	1000	8.6	-	267
48	10/24/84	7.2	-	550	-	-	8.4	-	285
49	10/25/84	8.5	-	750	590	1110	8.3	26.5	320
50	10/26/84	8.6	-	660	-	-	8.4	30.5	280
51	10/27/84	6.8	-	510	-	-	8.3	26	320
52	10/28/84	6.5	-	333	327	1380	8.0	30	555
53	10/29/84	10.4	-	580	-	-	8.2	28.5	580
54	10/30/84	8.4	-	460	353	1120	8.4	28	460

(continued)

TABLE C-1. (continued)

Day	Date	Plant Influent (B) pH	Plant Influent (B) Temp. (^{o}C)	Plant Influent (B) TSS (mg/l)	Plant Influent (B) VSS (mg/l)	Plant Influent (B) Chloride (mg/l)	Plant Effluent (J) pH	Plant Effluent (J) Temp. (^{o}C)	Plant Effluent (J) TSS (mg/l)
55	10/31/84	7.9	-	630	-	-	8.4	-	427
56	11/01/84	7.8	-	760	380	-	8.4	26	273
57	11/02/84	9.5	-	390	-	-	8.5	25	235
58	11/03/84	7.2	-	610	520	-	8.4	23	133
59	11/04/84	9.3	-	710	560	-	8.2	-	180
60	11/05/84	9.2	-	330	170	982	8.3	23	290
61	11/06/84	9.3	-	480	-	-	8.2	22	285
62	11/07/84	8.7	-	390	-	-	7.9	21	275
63	11/08/84	11.4	-	1300	-	-	8.2	18	360
64	11/09/84	10.6	-	520	380	1450	8.4	21	300
65	11/10/84	8.8	-	450	-	-	8.5	23	168
66	11/11/84	9.4	-	500	400	1470	8.4	23	200
67	11/12/84	9.3	-	470	-	-	8.4	18	307
68	11/13/84	7.9	-	590	510	-	8.3	18	287
69	11/14/84	7.8	-	920	-	-	8.4	18	313
70	11/15/84	9.6	-	390	320	1280	8.4	21	310
71	11/16/84	9.9	-	300	-	-	8.5	14	295
72	11/17/84	9.4	-	600	430	-	8.4	17	280

(continued)

TABLE C-1. (continued)

Day	Date	Plant Influent (B)					Plant Effluent (J)		
		pH	Temp. (^oC)	TSS (mg/l)	VSS (mg/l)	Chloride (mg/l)	pH	Temp. (^oC)	TSS (mg/l)
73	11/18/84	9.4	-	353	-	-	8.4	16	245
74	11/19/84	9.7	-	200	140	1120	8.3	16	175
75	11/20/84	9.2	-	350	-	-	8.2	15	175
76	11/21/84	9.7	-	580	-	-	7.8	16	280
77	11/22/84	9.5	-	680	-	-	8.2	16	167
78	11/23/84	9.9	-	790	530	437	8.3	17	190
79	11/24/84	8.2	-	350	-	-	8.2	-	178
80	11/25/84	9.8	-	1140	530	675	8.2	-	130
81	11/26/84	9.4	-	520	380	-	8.2	-	176
82	11/27/84	9.2	-	580	350	1280	8.3	-	213
83	11/28/84	9.2	-	520	370	339	8.0	-	470
84	11/29/84	-	-	-	-	-	7.9	18	240
85	11/30/84	-	-	-	-	-	7.9	17.5	305

*Dashes indicate no data recorded.

TABLE C-2. FULL-SCALE BIOLOGICAL TREATMENT PLANT DATA (ORGANICS)

Day	Date	Plant Influent (B)			Plant Effluent (J)			Removals	
		TCOD (mg/l)	TBOD (mg/l)	TOC (mg/l)	TCOD (mg/l)	SCOD (mg/l)	TBOD (mg/l)	TCOD (%)	TBOD (%)
1	09/07/84	7770	3400	2100	-*	-	-	-	-
2	09/08/84	6130	-	1740	776	-	-	87	-
3	09/09/84	7450	3500	1870	926	-	74	88	97.9
4	09/10/84	8720	-	2250	1320	-	160	85	-
5	09/11/84	7990	2700	2130	2620	-	-	67	-
6	09/12/84	7530	-	1900	1780	-	-	76	-
7	09/13/84	7240	2500	1960	1460	-	-	80	-
8	09/14/84	8190	-	-	1900	-	-	77	-
9	09/15/84	8390	-	2200	3180	-	-	62	-
10	09/16/84	8870	-	1710	2370	-	-	73	-
11	09/17/84	5770	2000	-	999	-	68	83	96.6
12	09/18/84	5350	-	-	1360	-	-	74	-
13	09/19/84	7700	3000	2130	891	-	63	88	97.9
14	09/20/84	7720	-	-	809	-	-	90	-
15	09/21/84	6710	-	-	794	-	-	88	-
16	09/22/84	7180	-	-	1040	-	70	86	-
17	09/23/84	7180	-	1890	894	-	61	88	-
18	09/24/84	7500	-	-	879	-	-	88	-
19	09/25/84	6750	-	1950	996	-	64	85	-
20	09/26/84	9840	-	-	-	-	-	-	-
21	09/27/84	7250	2900	2190	-	-	-	-	-
22	09/28/84	7140	-	-	-	-	-	-	-
23	09/29/84	7010	-	2380	1050	-	100	85	-
24	09/30/84	5640	-	-	-	-	-	-	-
25	10/01/84	4860	-	1380	857	-	91	82	-
26	10/02/84	6580	-	-	-	-	-	-	-
27	10/03/84	6660	2300	-	894	-	63	86	97.3
28	10/04/84	7660	-	-	-	-	-	-	-

(continued)

TABLE C-2. (continued)

Day	Date	Plant Influent (B)			Plant Effluent (J)			Removals	
		TCOD (mg/l)	TBOD (mg/l)	TOC (mg/l)	TCOD (mg/l)	SCOD (mg/l)	TBOD (mg/l)	TCOD (%)	TBOD (%)
29	10/05/84	8720	-	-	-	-	-	-	-
30	10/06/84	12000	-	-	1200	-	-	90	-
31	10/07/84	8910	4100	2280	1270	-	110	86	97.3
32	10/08/84	6330	-	-	-	-	-	-	-
33	10/09/84	7550	-	2370	1230	-	71	84	-
34	10/10/84	10600	3000	2380	1260	897	100	88	96.7
35	10/11/84	6200	-	1740	1360	857	-	78	-
36	10/12/84	6830	1900	1590	1310	770	99	81	94.8
37	10/13/84	9540	-	1980	1260	787	-	87	-
38	10/14/84	10100	-	2280	1320	764	-	87	-
39	10/15/84	12000	3900	2610	2160	1020	200	82	-
40	10/16/84	11400	-	2150	1830	1130	-	84	-
41	10/17/84	8440	2200	1810	1770	1000	200	79	90.9
42	10/18/84	6890	-	1550	-	863	-	-	-
43	10/19/84	6890	-	1730	-	701	-	-	-
44	10/20/84	6740	2500	1720	1470	773	160	78	93.6
45	10/21/84	7030	-	1880	1470	869	-	79	-
46	10/22/84	5520	-	1560	1440	959	-	74	-
47	10/23/84	5510	-	1590	1300	803	120	76	-
48	10/24/84	8280	-	-	1280	839	-	84	-
49	10/25/84	6850	2500	2140	1430	910	160	79	93.6
50	10/26/84	4060	-	-	1350	842	-	67	-
51	10/27/84	8890	-	-	1680	1010	-	81	-
52	10/28/84	7030	-	1850	2580	1330	290	63	-
53	10/29/84	6070	-	-	2510	1110	-	59	-
54	10/30/84	5640	2100	1550	1660	983	220	70	89.5
55	10/31/84	6170	-	-	-	879	-	-	-
56	11/01/84	2500	-	1320	1250	833	-	50	-

(continued)

TABLE C-2. (continued)

		Plant Influent (B)			Plant Effluent (J)			Removals	
Day	Date	TCOD (mg/l)	TBOD (mg/l)	TOC (mg/l)	TCOD (mg/l)	SCOD (mg/l)	TBOD (mg/l)	TCOD (%)	TBOD (%)
57	11/02/84	2260	-	-	-	704	-	-	-
58	11/03/84	3980	-	1310	-	710	-	-	-
59	11/04/84	4550	-	2830	-	885	-	-	-
60	11/05/84	3320	2800	1520	1410	1120	270	58	90.4
61	11/06/84	4680	-	-	-	1030	-	-	-
62	11/07/84	6840	-	-	-	885	-	-	-
63	11/08/84	6780	-	-	-	803	-	-	-
64	11/09/84	7140	3000	1900	1430	891	150	80	95.0
65	11/10/84	8910	-	-	-	910	-	-	-
66	11/11/84	7120	2900	1890	1290	851	140	82	95.2
67	11/12/84	5800	-	-	-	827	-	-	-
68	11/13/84	9290	-	-	-	922	-	-	-
69	11/14/84	7730	-	-	-	922	-	-	-
70	11/15/84	5700	-	-	1620	857	160	72	-
71	11/16/84	6450	-	-	-	803	-	-	-
72	11/17/84	7880	-	-	-	812	-	-	-
73	11/18/84	6870	-	-	-	715	-	-	-
74	11/19/84	4560	1700	-	1030	615	110	77	93.5
75	11/20/84	7830	-	-	-	673	-	-	-
76	11/21/84	7260	-	-	-	684	-	-	-
77	11/22/84	6660	-	-	-	456	-	-	-
78	11/23/84	5280	-	-	741	446	96	86	-
79	11/24/84	4950	-	-	-	412	-	-	-
80	11/25/84	5980	2300	-	-	464	66	-	97.1
81	11/26/84	7550	-	-	730	469	90	90	-
82	11/27/84	7990	3500	-	-	687	-	-	-
83	11/28/84	-	-	-	1760	957	340	-	-
84	11/29/84	-	-	-	773	-	-	-	-

*Dashes indicate no data recorded at that time.

TABLE C-3. FULL-SCALE PLANT AERATION BASIN MIXED LIQUOR SUSPENDED SOLIDS (9/8/84 TO 11/26/84)

	Aeration Basin Total Suspended Solids (mg/l)			
Date	No. 1	No. 2*	No. 3**	Ave.
9/8	3460	3930	4270	3890
9/9	3710	3890	4320	3970
9/10	3810	4080	4460	4120
9/11	3740	4030	4330	4030
9/12	3620	3980	4280	3960
9/13	3900	4290	4600	4260
9/14	4170	4220	4530	4310
9/15	4070	4130	4150	4120
9/16	4010	4070	4170	4080
9/17	3930	3930	4100	3990
9/18	4140	3990	4290	4140
9/19	3980	4340	4860	4390
9/20	4280	4510	5070	4620
9/21	4210	4150	4410	4260
9/22	4130	4010	4270	4140
9/23	4080	4050	4290	4140
9/24	4200	-***	4600	4400
9/25	4130	4060	4650	4280
9/26	4650	4790	5330	4920
9/27	4390	4590	4840	4610
9/28	4490	4350	4630	4490
9/29	4370	4560	4900	4610
9/30	4290	4490	4550	4440
10/1	2960	4090	4530	3860
10/2	4060	4020	3780	3950
10/3	3890	4190	4140	4070
10/4	4490	3830	4050	4120
10/5	4090	3770	3810	3890

(continued)

TABLE C-3. (continued)

	Aeration Basin Total Suspended Solids (mg/l)			
Date	No. 1	No. 2*	No. 3**	Ave.
10/6	4890	4020	4220	4380
10/7	4790	4180	4490	4490
10/8	4310	4200	4550	4350
10/9	3640	4120	4330	4030
10/10	4170	4090	4640	4300
10/11	3780	3690	3940	3800
10/12	3970	3920	4100	4000
10/13	3960	3780	4030	3920
10/14	4220	4380	4310	4300
10/15	4780	4290	4570	4550
10/16	4470	4300	4970	4580
10/18	4090	3950	4000	4010
10/19	4220	4150	4270	4210
10/20	4480	4180	4310	4320
10/21	3980	4020	4170	4060
10/22	4080	4260	4830	4390
10/23	4370	3860	4750	4330
10/24	4860	4780	5640	5090
10/25	5110	5300	5130	5180
10/26	5480	5410	5410	5430
10/27	4700	5170	4460	4780
10/28	5250	5250	5250	5250
10/29	4690	5440	4980	5040
10/30	5070	4920	5070	5020
10/31	4670	4400	4220	4430
11/1	3820	3470	3400	3560
11/2	3160	3110	3140	3140
11/3	3450	3390	3660	3500

(continued)

TABLE C-3. (continued)

Date	Aeration Basin Total Suspended Solids (mg/l) No. 1	No. 2*	No. 3**	Ave.
11/4	4450	3480	4250	4030
11/5	4000	3760	3710	3820
11/6	3380	3440	3110	3310
11/7	3560	3580	3660	3600
11/8	3220	3210	3310	3250
11/9	3590	3500	3720	3600
11/10	3330	3280	3670	3430
11/11	3070	3080	3420	3190
11/12	2960	3320	3270	3180
11/13	3240	3200	3570	3340
11/14	3290	3240	3550	3360
11/15	3280	3370	3560	3400
11/16	3370	-	3260	3320
11/17	3680	3600	3750	3680
11/18	3450	3380	3580	3470
11/19	3880	3560	3860	3770
11/26	4560	4680	4930	4720

Ave	4120
Max	5640
Min	2960

*Aeration Tank Effluent Code 4W-52
**Aeration Tank Effluent Code 4W-53
***Dashes indicate no data taken at that time
Note: All laboratory analysis by full-scale plant personnel.

TABLE C-4. FIELD OPERATION DATA SUMMARY - BTS-1

Date	Time	Temperature (°C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
9/8	1635	27	27	27	7.70	7.47	7.37	7.4	7.2	5.8	-*	-	-
9/9	1130	27	26.5	26	7.6	7.3	7.3	4.8	6.0	2.7	-	-	-
9/10		27	27	27	7.26	7.30	7.33	2.7	6.4	6.3	-	-	-
9/11	1120	29.5	28	29	7.63	7.58	7.62	4.0	5.6	1.8	-	-	-
9/12	1731	31	30	30	7.38	7.48	7.64	2.2	0.3	6.0	-	-	-
9/13	1140	31	31	30.5	7.32	7.35	7.30	4.0	5.4	1.8	-	-	-
	1615	-	-	-	-	-	-	3.6	4.8	5.9	-	-	-
9/14	1745	31.5	31	31	7.21	7.02	7.37	1.3	2.8	3.7	-	-	-
9/15	1145	33	33	32.5	7.52	7.35	7.74	0.0	0.5	2.2	-	-	-
9/16	-	29	29	28.5	7.30	7.33	7.16	2.8	4.9	4.4	-	-	-
9/17	1300	26	26	26	7.26	7.32	7.45	4.2	5.6	5.4	-	-	-
9/18	1200	23	23	23	7.02	7.07	7.8	5.4	6.7	7.0	-	-	-
9/19	1105	23	23	22.5	6.92	6.60	7.54	4.3	6.6	6.6	-	-	-
9/20	1100	26	25	25	7.18	6.96	7.01	0.4	5.9	5.4	-	-	-
	1600	-	-	-	-	-	-	4.9	6.0	5.3	-	-	-
9/21	1215	28	28	28	7.17	7.22	7.31	4.3	4.9	5.1	-	-	-
	1500	-	-	-	-	-	-	4.1	4.9	4.4	-	-	-
9/22	1455	31	30	30	7.42	7.46	7.90	5.4	6.4	5.6	-	-	-
9/23	-	31	31	30	7.43	7.25	8.07	4.0	4.6	4.0	-	-	-
9/24	1600	32	32	32	7.40	7.06	7.61	1.7	1.6	0.6	-	-	-
9/25	-	34	33	33	7.72	7.80	7.80	-	-	-	-	-	-
9/26	1310	32	32	32	7.76	7.71	7.93	3.4	4.6	3.0	-	-	-
	1655	-	-	-	-	-	-	3.2	5.0	3.0	-	-	-
9/27	1130	28	27	27	7.83	7.82	7.90	4.1	5.4	3.8	-	-	-
	1540	-	-	-	-	-	-	3.4	5.4	3.6	-	-	-
9/28	1145	24.5	24.5	24.5	7.52	7.72	8.01	2.7	6.6	5.5	-	-	-
9/29	1309	25	24	24	7.45	7.68	8.25	3.6	7.5	4.9	-	-	-
	1710	-	-	-	-	-	-	3.9	7.2	4.6	-	-	-
9/30	1155	27	26.5	25.5	7.77	7.66	7.98	4.1	5.8	2.9	-	-	-
10/1	1200	26.5	26.5	26.5	7.55	7.69	7.60	6.3	6.5	3.4	-	-	-
	1805	-	-	-	-	-	-	6.2	6.6	3.6	-	-	-
10/2	1320	27.5	28	28	7.07	7.14	7.15	3.4	5.3	3.7	-	-	-
	1830	-	-	-	-	-	-	2.8	4.6	3.0	-	-	-
10/3	1350	29	28	27.5	6.73	6.81	6.93	3.8	6.8	5.2	-	-	-
	1735	-	-	-	-	-	-	2.9	6.3	4.7	-	-	-
10/4	1530	31	30.5	30.5	6.77	6.53	6.56	4.0	5.8	4.1	-	-	-
10/5	1435	34	34	33.5	6.78	6.58	6.72	1.6	6.0	4.0	-	-	-
10/6	2045	30	29	27.5	7.21	6.99	6.92	2.2	4.6	5.0	-	-	-
10/7	1615	30	30	30	7.16	7.09	6.99	4.2	5.0	4.3	-	-	-
10/8	1320	32.5	32	32	7.15	6.89	6.79	4.8	4.2	3.2	1.5	0.68	0.73
	1840	32.5	32	32	6.98	6.72	6.59	4.4	4.3	3.2	-	-	-

(continued)

TABLE C-4. (continued)

Date	Time	Temperature (°C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
10/9	1430	31	31.5	31.5	6.29	6.08	5.96	4.8	5.2	4.2	-	-	-
	1855	33	33	32.5	6.60	6.15	6.05	0.9	4.6	4.1	-	-	-
10/10	1040	34	33.5	33.5	7.30	6.31	6.03	4.0	3.6	2.2	1.37	0.90	0.93
	1910	34.5	34	33.5	7.11	6.58	6.25	4.0	4.0	1.8	-	-	-
10/11	1135	32.5	32.5	32.5	6.90	6.13	5.97	4.9	4.1	2.0	1.43	0.72	0.48
	1735	32.5	32.5	32.5	7.24	6.31	6.06	5.4	3.8	1.5	-	-	-
10/12	1120	32	32	32	7.02	6.62	6.49	6.0	3.4	0.8	-	-	-
	1745	32	32	32	7.10	6.36	6.14	4.8	3.6	1.4	1.58	0.57	0.57
10/13	0840	31	31	31	6.44	5.97	5.85	5.8	4.6	2.8	1.03	0.50	0.38
	1540	31	31	30.5	6.26	5.92	5.83	5.4	4.8	2.8	-	-	-
10/14	0912	31.5	31	31	6.84	5.90	5.68	6.0	4.3	2.8	1.47	0.67	0.57
	1310	31	31	31	6.90	6.14	5.95	5.4	4.4	2.8	-	-	-
10/15	1000	31.5	31.5	31.5	6.70	6.40	6.30	4.6	2.6	0.7	1.33	0.72	0.57
	1600	32.5	32	31.5	7.34	6.70	6.46	4.4	3.1	1.1	-	-	-
10/16	0927	33	33	33	7.26	6.85	6.69	5.1	3.1	0.8	0.98	0.63	0.57
	1450	33	33	33	7.37	6.95	6.88	4.6	0.8	1.5	-	-	-
10/17	0940	33.5	33	33	7.36	7.02	6.99	5.4	1.2	2.2	0.97	0.65	0.57
	1540	32.5	32.5	32.5	7.51	7.08	7.04	5.8	2.2	2.0	-	-	-
10/18	0840	32	32	31.5	6.99	6.65	6.57	5.0	1.8	2.4	1.03	0.63	0.47
	1530	32	32	31.5	7.53	6.93	6.90	5.7	2.4	1.6	-	-	-
10/19	1004	32.5	32	32	6.75	6.65	6.58	4.8	3.5	2.4	0.92	0.62	0.55
	1755	33.5	33	33	6.95	6.57	6.45	4.2	3.6	2.0	-	-	-
10/20	0815	34	33.5	33.5	6.28	6.16	6.19	4.4	3.5	1.9	1.27	0.58	0.57
	1404	34	33.5	33.5	6.61	6.21	6.14	4.2	3.2	2.2	-	-	-
10/21	0900	34	34	34	6.76	6.12	5.94	4.7	2.8	1.6	1.40	0.77	0.73
	1245	34	34	34	6.87	6.46	6.34	3.6	2.6	0.9	-	-	-
10/22	0840	34	34	35	4.09	5.54	5.71	6.2	4.6	1.2	1.25	0.87	0.80
	1600	34	34	34	7.02	7.03	7.14	3.6	1.8	0.8	-	-	-
10/23	0840	33	33	33	6.30	5.91	5.83	4.3	4.0	2.8	1.20	0.60	0.57
	1810	32.5	32.5	32.5	6.00	5.98	6.07	5.4	4.8	1.6	-	-	-
10/24	0935	31	31	30.5	6.39	5.84	5.77	2.6	2.4	1.4	-	-	-
10/25	0857	30.5	30	30	6.75	6.39	6.38	1.6	3.4	2.2	-	-	-
10/26	0922	31	30.5	30	7.22	7.09	7.19	0.4	0.4	0.4	1.43	0.67	0.58
10/27	1020	32.5	32.0	32.0	7.26	7.21	7.24	2.6	2.1	1.4	-	-	-
10/28	0850	35	35	34.5	6.92	6.95	6.99	1.0	1.6	0.6	-	-	-
10/29	0915	32	32	32	5.11	6.35	6.29	5.2	4.5	1.9	-	-	-
10/30	0941	32.5	32	32	6.34	5.90	5.76	4.8	5.3	3.5	-	-	-
10/31	1101	-	-	-	6.35	5.43	5.24	5.6	6.2	4.3	-	-	-
11/1	0940	30	30	29.5	6.35	5.38	5.17	4.1	4.5	1.2	-	-	-
11/2	0845	28	28.5	28.5	6.30	5.60	5.40	5.8	5.4	4.8	-	-	-
11/3	1127	25.5	25.5	25.5	6.48	5.70	5.92	3.0	2.3	3.3	-	-	-

(continued)

TABLE C-4. (continued)

Date	Time	Temperature (^{o}C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
11/4	0940	27	27	26.5	7.51	7.40	7.45	1.0	0.8	1.3	-	-	-
11/5	0931	29.5	29	29	7.37	7.32	7.34	4.4	2.9	2.8	-	-	-
11/6	0926	29.5	29	29	6.88	6.90	7.00	3.5	2.6	4.1	-	-	-
11/7	1118	27	27	27	6.43	6.14	6.21	2.3	3.6	5.5	-	-	-
11/8	0903	27	26	26	6.94	6.02	5.99	3.3	2.8	5.2	-	-	-
11/9	0930	26.5	26	26	7.03	6.99	7.16	3.2	2.1	4.0	-	-	-
11/10	0911	27	27	27	7.10	7.21	7.18	3.0	4.3	3.8	-	-	-
11/11	1029	29	29	29	7.21	7.27	7.29	1.5	2.0	2.8	-	-	-
11/12	0858	28	28	28	7.01	7.12	7.06	3.4	4.4	2.3	-	-	-
11/13	0936	26	26	26	7.04	6.67	6.57	1.2	3.5	3.4	-	-	-
11/14	1035	26	26	26	6.99	6.89	6.88	2.5	3.7	3.2	-	-	-
11/15	1335	27	27	27	7.20	7.28	7.29	4.5	5.8	5.6	-	-	-
11/16	1330	25	25	25	7.45	7.34	7.29	7.0	6.3	5.7	-	-	-
11/17	1235	25	25	25	7.31	7.10	7.10	3.5	4.0	3.4	-	-	-
11/18	1845	25	25	25	7.23	7.13	7.18	2.8	1.2	1.1	-	-	-
11/19	1530	23.5	23.5	23.5	7.27	7.23	7.24	2.0	3.0	1.9	-	-	-
11/20	1550	20	20	20	7.54	7.28	7.26	1.0	2.8	2.8	-	-	-
11/21	0939	21.5	23.5	23.5	7.10	7.00	7.00	2.0	0.4	0.5	-	-	-
11/22	0905	25	25.5	26	7.25	7.10	7.05	1.1	3.4	2.0	-	-	-
11/23	0945	26.5	26.5	26.5	7.30	7.20	7.10	4.4	4.6	3.4	-	-	-
11/24	1205	25	25	25.5	7.50	7.40	7.42	4.0	4.2	2.8	-	-	-
11/25	1150	26	26.5	26.5	7.60	7.35	7.30	4.0	4.4	2.2	-	-	-
11/26	1004	27	26.5	26	7.10	7.20	7.10	1.6	5.2	3.8	-	-	-
	1702	26.5	26.5	26	7.60	7.30	7.20	0.2	4.0	2.0	-	-	-
11/27	0950	26	26	26	7.20	7.20	7.20	2.0	4.4	2.0	-	-	-
	1455	-	-	-	-	-	-	1.4	4.2	1.8	0.97	0.63	0.55
11/28	0835	28.5	28.5	28.5	7.10	7.00	7.00	-	-	-	-	-	-
11/29	0900	27	27	27	7.00	7.00	6.90	5.4	5.5	2.8	-	-	-

*Dashes indicate no readings taken.

TABLE C-5. FIELD OPERATION DATA SUMMARY - BTS-2

Date	Time	Temperature (^{o}C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
9/8	1645	30	30	30	7.76	7.48	7.69	1.0	4.0	7.8	-*	-	-
9/9	1145	28	29	28.5	8.13	7.57	7.69	1.0	1.2	5.8	-	-	-
9/10	-	29.5	29.5	29.5	7.76	7.45	7.26	0.3	0.6	5.8	-	-	-
9/11	1805	32	32	32	8.09	7.69	7.79	0.1	0.2	2.4	-	-	-
9/12	1730	31	31.5	32	7.72	7.45	7.64	0.2	0.6	4.4	-	-	-
9/13	1200	31	31	31	7.62	7.22	7.24	1.0	2.7	5.8	-	-	-
	1620	-	-	-	-	-	-	2.8	4.4	4.7	-	-	-
9/14	1750	32.5	32	32	7.23	7.14	7.35	1.3	3.2	2.0	-	-	-
9/15	1200	33.5	33.5	33	7.44	7.34	7.66	0.0	0.8	0.8	-	-	-
9/16	-	29.5	29.5	29.5	7.40	7.30	7.10	0.3	3.2	1.7	-	-	-
9/17	-	28.5	28.5	28	7.47	7.16	7.10	5.7	3.9	6.4	-	-	-
9/18	1200	26	26	26	7.13	6.95	7.79	5.9	5.4	5.9	-	-	-
9/19	1100	25	25	25	6.87	6.67	7.78	3.8	4.6	5.3	-	-	-
	1700	-	-	-	-	-	-	1.4	4.1	0.6	-	-	-
9/20	1130	27	26.5	26	7.05	6.98	7.20	0.2	4.3	3.0	-	-	-
	1440	-	-	-	-	-	-	2.4	3.2	1.8	-	-	-
9/21	1130	29	29	29	7.13	7.01	7.67	3.7	2.9	1.1	-	-	-
	1500	-	-	-	-	-	-	3.4	2.3	2.4	-	-	-
9/22	1445	31	30	30	7.3	7.23	7.50	1.6	1.4	2.4	-	-	-
9/23	1115	31	31	31	7.3	7.19	8.15	1.2	1.2	2.9	-	-	-
9/24	1515	31.5	31	31	8.37	7.49	8.00	0.0	2.9	1.2	-	-	-
9/25	-	32	32	31	7.65	7.66	7.91	-	-	-	-	-	-
9/26	-	32	31.5	31.5	7.72	7.65	7.35	-	-	-	-	-	-
	1650	-	-	-	-	-	-	1.8	0.0	3.0	-	-	-
9/27	1115	28	28	28	7.72	7.73	7.70	2.8	0.0	0.0	-	-	-
	1530	-	-	-	-	-	-	0.4	3.6	0.4	-	-	-
9/28	1130	26	26	26	7.55	7.49	7.91	0.4	2.8	0.2	-	-	-
9/29	1300	25.5	25	25	7.48	7.37	7.77	2.8	1.2	1.7	-	-	-
	1705	-	-	-	-	-	-	1.7	2.2	1.4	-	-	-
9/30	1150	27.5	27.5	27.5	7.68	7.38	7.66	2.5	1.5	1.6	-	-	-
10/1	1205	27	27	27	7.55	7.51	7.76	5.2	4.7	4.7	-	-	-
	1800	-	-	-	-	-	-	5.0	5.2	5.6	-	-	-
10/2	1317	29	28.5	28.5	7.00	7.14	7.42	3.0	4.2	4.9	-	-	-
	1845	-	-	-	-	-	-	2.8	4.4	5.0	-	-	-
10/3	1355	30.5	30	30	7.12	6.84	6.88	0.5	1.3	2.1	-	-	-
	1740	-	-	-	-	-	-	1.0	2.2	3.3	-	-	-
10/4	1535	31.5	31	31	6.89	6.88	6.76	1.3	3.7	4.2	-	-	-
10/5	1445	33	32.5	32.5	7.93	7.41	7.01	0.6	0.5	0.9	-	-	-
10/6	2050	31	30.5	29	7.57	7.51	7.55	1.4	0.8	0.5	-	-	-
10/7	1625	31	31	31	7.71	7.55	7.67	3.0	1.0	0.7	-	-	-

(continued)

TABLE C-5. (continued)

Date	Time	Temperature (°C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
10/8	1330	32.5	33	33	7.59	7.40	7.52	4.3	0.8	4.2	-	0.80	0.77
	1845	32.5	32.5	32	7.46	7.28	7.41	4.4	0.6	4.3	-	-	-
10/9	1430	31.5	32	32	6.69	6.55	6.63	4.5	1.0	0.8	-	-	-
	1900	33	33	33	7.00	6.61	6.60	0.7	1.3	5.2	-	-	-
10/10	1045	33.5	33.5	33.5	7.40	6.98	7.02	4.0	1.0	4.6	1.20	0.88	0.73
	1915	34	33.5	33.5	7.20	7.12	7.20	2.2	3.2	5.1	-	-	-
10/11	1140	32	32.5	32.5	7.16	6.66	6.63	4.3	3.5	5.2	1.00	0.72	0.65
	1740	32.5	32.5	32	7.27	6.89	6.87	5.1	4.0	5.7	-	-	-
10/12	1125	32	31.5	31	6.99	7.04	7.19	5.1	3.7	5.4	-	-	-
	1800	32	31.5	31.5	6.99	6.78	6.90	4.4	4.0	6.0	1.40	0.62	0.58
10/13	0848	30.5	30.5	30.5	6.39	6.09	6.14	4.9	4.2	6.1	0.97	0.63	0.52
	1544	30.5	30	30	6.32	6.00	6.10	4.6	4.7	6.6	-	-	-
10/14	0918	31	30.5	30.5	6.82	6.26	6.22	4.6	4.4	6.4	1.07	0.62	0.52
	1210	31	30.5	30.5	6.94	6.53	6.53	4.1	3.8	6.2	-	-	-
10/15	1005	31.5	31.5	31.5	7.70	7.20	7.20	0.4	0.3	4.3	1.90	1.13	1.07
	1410	31.5	31.5	31.5	7.58	7.40	7.37	1.8	0.4	3.8	-	-	-
10/16	0932	33	33	33	7.40	7.20	7.37	3.6	1.0	4.3	1.10	0.80	0.87
	1545	33	33	33	7.33	7.21	7.35	2.4	1.4	1.3	-	-	-
10/17	0945	33	33	33	7.44	7.21	7.20	3.2	1.2	2.8	1.17	0.77	0.70
	1545	32.5	32.5	32.5	7.52	7.25	7.24	3.8	1.6	2.8	-	-	-
10/18	0845	31.5	31.5	32	7.05	6.84	6.81	2.9	2.2	3.2	1.07	0.80	0.52
	1533	32	32	31.5	7.48	7.10	7.12	3.3	1.4	3.5	-	-	-
10/19	1008	32	32	32	6.93	6.82	6.87	3.0	1.0	3.8	0.82	0.43	0.52
	1800	33	32.5	32.5	7.09	6.82	6.76	2.8	0.5	2.0	-	-	-
10/20	0817	33	33	33	6.61	6.60	6.62	3.6	0.4	1.1	1.23	0.77	0.58
	1415	33	33	33	6.70	6.52	6.42	3.8	0.8	1.8	-	-	-
10/21	0920	33	33	33	6.74	6.54	6.42	3.8	0.8	2.2	1.10	0.63	0.57
	1248	33	33	33	6.79	6.68	6.59	2.2	2.8	1.8	-	-	-
10/22	0830	33	33	34	4.53	5.79	6.03	5.6	3.0	4.6	1.07	0.70	0.65
	1610	33	33	33	6.98	7.04	7.07	3.2	2.2	3.8	-	-	-
10/23	0835	32	32	32	6.23	5.98	6.04	3.7	4.3	5.8	0.98	0.58	0.48
	1800	31	31	32	6.44	6.31	6.26	5.2	4.4	4.6	-	-	-
10/24	0940	30	29.5	29.5	6.30	5.89	5.78	2.6	2.8	2.8	-	-	-
10/25	0900	29.5	29	29	6.45	6.26	6.15	4.6	4.0	3.0	-	-	-
10/26	0955	30	30	30	6.70	6.44	7.02	1.4	1.2	0.9	1.52	0.80	0.75
10/27	1025	32.5	32	32	7.24	7.25	7.29	0.8	1.0	0.8	-	-	-
10/28	0910	33.5	33.5	33.5	7.65	7.56	7.60	0.2	0.2	0.2	-	-	-
10/29	0920	32	32	32	7.02	7.29	7.44	2.0	0.8	1.2	-	-	-
10/30	0956	32	32	32	7.15	7.07	7.12	1.8	1.2	0.8	-	-	-
10/31	1133	-	-	-	6.20	5.50	5.40	6.1	5.5	4.0	-	-	-
11/1	1054	29	29	29	5.94	5.41	5.27	4.7	5.0	2.6	-	-	-
11/2	1144	28	28	28	6.30	5.80	5.70	6.0	5.3	4.0	-	-	-

(continued)

TABLE C-5. (continued)

Date	Time	Temperature (°C)			pH			DO (mg/1)			Oxygen Uptake Rate (mg/1-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
11/3	1137	25	25	25	6.20	6.00	5.70	2.9	2.8	2.7	-	-	-
11/4	1025	26.5	26.5	26.5	6.73	6.52	6.61	2.7	1.3	1.0	-	-	-
11/5	0943	28.5	28.5	28	7.53	7.40	7.73	4.4	1.8	1.7	-	-	-
11/6	0953	28.5	28.5	28	7.27	7.28	7.27	2.9	3.2	2.6	-	-	-
11/7	1141	25.8	26	26	6.90	6.98	6.99	3.5	4.4	3.9	-	-	-
11/8	0913	25.5	25.5	25.5	7.21	6.83	6.86	4.3	4.8	4.6	-	-	-
11/9	0950	25	25	25	7.32	7.26	7.35	3.7	4.2	4.7	-	-	-
11/10	0920	26	26	26	7.37	7.34	7.35	3.9	4.2	4.6	-	-	-
11/11	1042	28	28	28	7.17	7.20	7.25	3.8	3.9	3.8	-	-	-
11/12	1007	27	27	27	7.22	7.20	7.19	5.4	4.6	4.5	-	-	-
11/13	0950	26	26	26	6.76	6.56	6.57	2.4	4.7	4.6	-	-	-
11/14	1108	26	26	26	6.70	6.46	6.47	3.9	4.8	4.4	-	-	-
11/15	1330	27	27	27.5	6.98	6.75	6.79	4.8	4.4	3.8	-	-	-
11/16	1345	26	26	26	7.33	6.96	6.79	6.4	4.2	3.7	-	-	-
11/17	1300	26	26	26	7.22	6.80	6.70	1.8	3.2	3.3	-	-	-
11/18	1830	26	26	26	7.34	7.26	7.36	2.8	1.2	1.2	-	-	-
11/19	1545	24.5	24.5	24.5	7.29	7.44	7.50	3.6	4.9	4.5	-	-	-
11/20	1600	19	19	20	7.26	7.35	7.31	4.2	5.4	5.2	-	-	-
11/21	1125	26.5	26.5	26.5	6.90	6.90	6.90	0.4	2.0	2.5	-	-	-
11/22	0925	28	28.5	28.5	6.75	6.85	7.00	3.5	1.7	1.4	-	-	-
11/23	1015	30	30.5	30.5	7.40	7.15	7.05	4.3	1.6	1.6	-	-	-
11/24	1226	27	27	27.5	7.10	7.05	7.02	4.1	1.7	1.5	-	-	-
11/25	1450	27	27.5	27.5	7.20	6.95	6.90	4.6	0.4	1.2	-	-	-
11/26	1012	27	27.5	27.5	6.80	6.60	6.70	3.0	0.8	2.0	-	-	-
	1715	27.5	27.5	27.5	6.80	6.60	6.60	2.2	0.5	1.8	-	-	-
11/27	0956	27	27.5	27.5	6.70	6.60	6.50	4.0	1.1	2.4	-	-	-
	1500	-	-	-	6.80	6.70	6.70	4.2	1.1	2.8	0.83	0.62	0.53
11/28	0838	30.0	30.0	29.5	6.90	6.80	6.80	-	-	-	-	-	-
11/29	0905	28	28	28	6.90	6.80	6.90	5.2	2.5	3.6	-	-	-

*Dashes indicate no readings taken.

TABLE C-6. FIELD OPERATION DATA SUMMARY - BTS-3

Date	Time	Temperature (°C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
9/8	1550	21	21	21	-*	-	-	2.1	1.8	2.8	-	-	-
9/9	1100	22	22	22	7.94	7.84	7.84	0.3	0.3	0.5	-	-	-
9/10	1600	25	25	25	7.85	7.77	7.65	0.3	0.1	0.1	-	-	-
9/11	1200	25	26	25	7.80	7.80	7.80	0.1	0.1	0.3	-	-	-
9/12	0900	22	21	21	7.92	7.89	8.04	0.5	4.0	5.0	-	-	-
9/13	0840	21	20.5	20.5	7.73	7.84	7.90	6.2	6.2	6.8	-	-	-
	1600	-	-	-	-	-	-	4.0	5.5	6.0	-	-	-
9/14	0750	22	22	22	7.69	7.70	-	3.4	4.8	5.6	-	-	-
	1720	-	-	-	-	-	-	2.2	4.3	5.0	-	-	-
9/15	1130	24	24	24	7.55	7.54	7.82	1.2	3.4	4.7	-	-	-
9/16	-	18	17	17	7.67	7.65	7.57	8.8	8.2	8.4	-	-	-
9/17	-	14	14	14	7.75	7.73	8.11	6.8	7.1	7.8	-	-	-
9/18	1300	14.5	14.5	14.5	7.65	7.67	-	5.6	6.7	7.9	-	-	-
9/19	1045	15	15	15	7.69	7.57	8.13	1.3	3.3	4.4	-	-	-
	1645	-	-	-	-	-	-	0.0	1.0	1.8	-	-	-
9/20	1030	12	12	12	7.68	7.67	7.89	3.5	4.2	4.0	-	-	-
9/21	1050	20	20	20	7.38	7.34	7.95	2.2	2.1	2.3	-	-	-
	1530	-	-	-	-	-	-	2.3	2.4	1.9	-	-	-
9/22	1430	21	21	21	7.60	7.58	8.24	2.8	2.5	3.1	-	-	-
9/23	1045	21	21	21	7.84	7.85	8.59	2.8	2.4	2.9	-	-	-
9/24	1445	22	22	22	7.51	7.58	8.32	1.9	2.3	2.6	-	-	-
9/25	-	22.5	22.5	22.5	7.89	7.96	8.41	-	-	-	-	-	-
9/26	1300	21	21	21	8.27	8.22	8.37	4.5	4.9	5.3	-	-	-
	1640	-	-	-	-	-	-	4.1	4.8	5.1	-	-	-
9/27	1105	15	15	15	8.23	8.19	8.37	4.6	4.4	4.1	-	-	-
	1515	-	-	-	-	-	-	2.2	2.1	2.0	-	-	-
9/28	1110	13.5	13.5	13.5	8.18	8.10	8.25	3.6	3.9	4.2	-	-	-
9/29	1230	18	18	18	8.15	8.05	8.25	2.6	2.1	5.0	-	-	-
	1700	-	-	-	-	-	-	1.8	2.9	0.6	-	-	-
9/30	1145	20.5	20.5	21	8.20	8.00	8.17	0.9	1.4	2.3	-	-	-
10/1	1200	20	20	20	7.86	7.84	8.09	4.7	5.1	5.2	-	-	-
	1740	-	-	-	-	-	-	4.3	4.8	4.5	-	-	-
10/2	1310	20	19.5	19.5	7.62	7.63	8.20	0.9	1.9	1.6	-	-	-
	1730	-	-	-	-	-	-	2.2	4.6	3.5	-	-	-
10/3	1320	29	29.5	29.5	7.47	7.46	8.41	4.2	4.6	3.8	-	-	-
	1725	-	-	-	-	-	-	3.0	2.8	3.2	-	-	-
10/4	1430	34	34.5	34.5	7.44	7.47	8.47	5.1	5.4	5.2	-	-	-
10/5	1430	30	30	30.5	7.94	7.80	8.03	0.7	0.6	1.5	-	-	-
	1800	-	-	-	-	-	-	4.4	5.2	4.6	-	-	-
10/6	2030	28.5	28.5	28.5	7.78	7.80	7.82	0.7	2.4	2.4	-	-	-

(continued)

TABLE C-6. (continued)

Date	Time	Temperature (°C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
10/7	1600	29	29	29	7.72	7.68	7.66	1.0	3.5	3.5	-	-	-
10/8	1245	27.5	27.5	27.5	7.68	7.75	7.75	4.0	4.5	4.2	1.20	0.80	0.70
	1830	29	29.5	29.5	8.16	8.15	8.06	3.2	4.1	3.6	-	-	-
10/9	1420	30.5	30.5	30.5	7.40	7.46	7.48	3.3	3.8	3.5	-	-	-
	1830	31.5	32	32	8.43	8.42	8.47	3.0	3.6	3.2	-	-	-
10/10	1108	31	31.5	32	8.28	8.39	8.59	3.5	4.0	3.5	1.48	0.97	0.87
	1900	32	32.5	33	8.43	8.56	8.52	1.4	3.4	3.4	-	-	-
10/11	1145	26.5	27	27	8.40	8.60	7.78	6.0	5.8	5.8	1.00	0.70	0.50
	1725	28	28.5	28.5	8.04	8.28	8.37	6.2	6.0	5.6	-	-	-
10/12	1200	31.5	32	32.5	8.43	8.46	8.67	5.3	5.2	5.1	-	-	-
	1730	32	32.5	33	8.08	8.29	7.94	5.2	5.2	5.1	1.00	0.67	0.55
10/13	0830	30	30	30.5	8.32	8.47	8.41	6.4	6.0	5.8	0.87	0.63	0.52
	1030	32	33	33	8.10	7.93	7.70	0.4	3.0	3.5	-	-	-
10/14	0815	29	29.5	29.5	7.99	8.14	8.04	2.6	4.6	4.6	1.15	0.80	0.65
	1254	30.5	31	31	7.85	7.96	7.78	1.6	4.0	4.2	-	-	-
10/15	0750	28	29	29	7.58	7.72	7.68	1.6	3.2	3.4	1.43	0.92	1.00
	1615	32	32.5	32.5	7.59	7.70	7.67	2.0	3.2	3.2	-	-	-
10/16	0850	28	25.5	28.5	7.63	7.65	7.69	3.2	4.8	5.0	1.07	1.00	0.82
	1735	33	33.5	33.5	7.52	7.57	7.61	2.4	3.4	3.2	-	-	-
10/17	0930	32.5	33.5	33	7.61	7.61	7.66	3.7	4.1	4.0	1.30	1.03	1.00
	1525	32.5	33.5	33.5	7.46	7.47	7.47	3.6	4.2	3.8	-	-	-
10/18	0810	32	33	33	7.10	7.05	7.05	3.4	3.2	3.1	1.27	1.03	0.98
	1530	33	33.5	33.5	7.32	7.14	7.11	3.2	3.0	3.2	-	-	-
10/19	0735	32	33	33	6.97	6.73	6.74	3.6	3.8	3.7	1.37	0.85	0.72
	1735	32.5	33.5	33.5	6.55	6.43	6.36	3.1	4.0	4.2	-	-	-
10/20	0805	33	33	32	6.49	6.48	6.37	3.4	4.0	4.2	1.27	1.03	0.87
	1344	32.5	33.5	33	-	-	-	3.5	4.0	4.0	-	-	-
10/21	0900	32	32	32	6.45	6.21	6.19	3.1	4.0	4.2	1.37	1.10	0.92
	1230	32.5	33	33	6.51	6.41	6.41	3.3	3.6	3.7	-	-	-
10/22	0745	32	32	33	6.22	6.19	6.19	4.8	4.6	4.6	1.07	0.83	0.85
	1600	32	33	33	7.07	7.02	7.07	3.4	3.4	3.0	-	-	-
10/23	0800	32	32	32	6.18	6.16	6.05	4.4	5.0	5.0	1.00	0.87	0.73
	1730	31	32	32	7.05	6.75	6.70	3.3	4.8	4.6	-	-	-
10/24	0800	31.5	32.5	32	6.22	6.09	6.26	1.2	4.2	4.2	-	-	-
10/25	0855	32	32.5	32.5	6.54	6.52	6.50	3.4	4.8	4.7	-	-	-
10/26	0900	29.5	29.5	30	6.58	6.63	6.69	2.3	4.8	4.8	1.03	0.70	0.58
10/27	1000	29.5	29.5	30.8	6.73	6.77	6.81	3.5	4.7	4.4	-	-	-
10/28	0840	29.5	3.0	29.5	6.78	6.95	6.92	1.5	4.2	3.8	-	-	-
10/29	1743	30	30	30	6.62	6.72	6.89	2.0	4.2	3.8	-	-	-
10/30	0905	29	29.5	29.5	6.43	6.42	6.37	4.3	5.0	4.6	-	-	-
10/31	1040	29	29	29.5	6.35	6.28	6.32	4.5	5.5	5.5	-	-	-

(continued)

TABLE C-6. (continued)

Date	Time	Temperature (^{o}C)			pH			DO (mg/l)			Oxygen Uptake Rate (mg/l-min)		
		Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
11/1	0900	29	29	29.5	6.29	6.28	6.29	4.6	5.5	5.3	-	-	-
11/2	1000	29	29.5	29.5	6.29	6.20	6.21	5.4	5.8	5.6	-	-	-
11/3	1121	28	29	29	6.19	6.18	6.21	4.4	4.8	3.8	-	-	-
11/4	0918	29	29.5	29.5	6.24	6.10	5.92	3.3	4.9	4.9	-	-	-
11/5	0910	29	29.5	29.5	6.53	6.68	6.95	3.4	4.1	3.5	-	-	-
11/6	0913	17	17	17	6.90	6.87	6.94	5.4	6.0	5.8	-	-	-
11/7	1104	28	28	28	6.60	6.70	6.76	5.1	5.6	5.6	-	-	-
11/8	0845	28	28	28	6.73	6.74	6.75	4.7	5.4	5.1	-	-	-
11/9	0907	28	28	28	7.09	7.46	8.09	4.6	5.5	5.3	-	-	-
11/10	0859	28	28	28	7.26	7.43	7.49	4.2	4.7	4.0	-	-	-
11/11	0840	28	28.5	28.5	7.26	7.30	7.40	4.9	5.3	5.2	-	-	-
11/12	0840	28	28	28	7.08	7.20	7.23	4.5	5.5	5.2	-	-	-
11/13	0900	28	28	28	6.35	6.24	6.24	3.5	5.0	4.9	-	-	-
11/14	1021	28	28	28	6.76	6.71	6.69	4.3	4.6	4.4	-	-	-
11/15	1320	28	28	28	6.26	6.20	6.04	4.8	5.6	5.0	-	-	-
11/16	1300	28	28	28	6.23	6.13	6.15	4.2	5.2	5.2	-	-	-
11/17	1200	28	28	28	7.33	7.29	7.38	3.5	5.0	5.0	-	-	-
11/18	1800	27.5	27.5	28	7.33	7.38	7.41	4.2	4.6	4.5	-	-	-
11/19	1500	27.5	28	28	7.13	7.26	7.27	5.0	5.5	5.5	-	-	-
11/20	1345	28	28	28	7.05	7.03	7.05	5.2	6.0	6.0	-	-	-
11/21	1330	21	21	22	6.90	6.91	6.93	6.0	5.8	6.4	-	-	-
11/22	0744	25	26.5	27	6.77	6.74	6.73	4.2	4.8	4.3	-	-	-
11/23	0925	24	25.5	26	7.03	6.98	6.98	3.4	3.7	3.0	-	-	-
11/24	1152	25	26	27	6.80	6.81	6.81	3.2	3.4	2.8	-	-	-
11/25	1620	25	26	26	6.72	6.59	6.37	-	-	-	-	-	-
11/26	0950	26	26	26	7.2	7.2	7.2	2.0	4.4	2.0	-	-	-
	1455	-	-	-	-	-	-	1.4	4.2	1.8	-	-	-
11/27	0800	24	26	26	7.37	7.47	7.45	3.0	4.2	4.0	-	-	-
	1440	25.5	26.5	27	7.48	7.50	-	1.6	4.0	3.4	0.82	0.65	0.65
11/28	0910	26	26	28	7.43	7.54	7.61	0.6	3.8	3.6	-	-	-
	1453	26	27	27	7.31	7.44	7.45	1.2	3.2	2.6	-	-	-
11/29	0935	23.5	25	26	7.49	7.57	7.58	5.4	5.8	5.8	-	-	-

*Dashes indicate no readings taken.

TABLE C-7. BTS-1 EFFLUENT ANALYTICAL DATA

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
3	09/09/84	7.5	818	687	52	9.8	235	----*	58	43
4	09/10/84	7.9	922	715	----	----	----	----	69	67
5	09/11/84	7.9	894	751	30.4	7.4	329	----	80	62
6	09/12/84	7.9	919	788	----	----	----	224	69	55
7	09/13/84	7.7	916	833	19.8	----	255	----	59	50
8	09/14/84	7.6	872	782	----	----	----	----	88	74
9	09/15/84	7.7	891	715	----	----	----	----	56	48
10	09/16/84	7.6	926	755	----	----	----	210	63	50
11	09/17/84	7.6	919	777	17.4	4.4	276	----	66	50
12	09/18/84	7.5	863	683	----	----	----	----	104	98
13	09/19/84	7.0	785	596	16.8	5.7	234	145	180	----
14	09/20/84	7.0	1080	634	----	----	----	----	298	260
15	09/21/84	7.7	707	578	----	----	----	----	124	----
16	09/22/84	8.0	712	578	----	----	----	----	89	----
17	09/23/84	7.9	727	554	----	----	189	145	124	110
18	09/24/84	8.4	1750	604	----	----	----	----	900	----
19	09/25/84	8.5	2230	599	----	----	474	162	1220	----
20	09/26/84	8.5	1770	591	----	----	----	----	900	----
21	09/27/84	8.5	1060	528	----	----	390	----	420	240
22	09/28/84	8.1	684	578	----	----	----	----	78	----
23	09/29/84	8.0	656	523	----	----	160	136	90	61
24	09/30/84	8.0	604	497	----	----	----	----	64	----
25	10/01/84	8.0	----	----	----	----	158	144	53	42
26	10/02/84	7.6	586	551	----	----	----	----	51	----
27	10/03/84	7.2	546	449	9.2	4.2	138	99.3	32	27
28	10/04/84	7.0	----	----	----	----	----	----	29	----
29	10/05/84	7.1	538	468	----	----	----	----	34	----
30	10/06/84	----	----	----	----	----	----	----	----	----
31	10/07/84	7.3	818	659	15	8	177	131	62	51

(continued)

TABLE C-7. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
32	10/08/84	7.0	634	----	----	----	----	----	77	----
33	10/09/84	6.8	707	554	----	----	155	117	102	90
34	10/10/84	6.6	562	476	13.1	4	169	131	64	50
35	10/11/84	6.6	570	479	----	----	146	132	47	41
36	10/12/84	6.7	578	424	7.8	3	171	137	48	41
37	10/13/84	6.2	583	476	----	----	133	106	110	86
38	10/14/84	6.3	504	431	----	----	139	119	70	58
39	10/15/84	6.7	605	472	16.6	3.6	149	118	64	49
40	10/16/84	7.2	580	492	----	----	174	121	154	76
41	10/17/84	7.1	679	497	33	17	151	129	61	48
42	10/18/84	7.2	570	476	----	----	195	113	56	49
43	10/19/84	7.0	572	444	----	----	138	111	67	54
44	10/20/84	6.7	551	449	9.7	3.8	141	112	59	49
45	10/21/84	6.6	578	451	----	----	186	112	71	56
46	10/22/84	6.7	599	436	----	----	152	131	96	64
47	10/23/84	6.7	659	419	15	3	171	129	222	122
48	10/24/84	6.4	718	402	----	----	----	----	210	----
49	10/25/84	6.7	932	461	36	4	----	----	393	327
50	10/26/84	7.2	690	400	----	----	----	----	140	----
51	10/27/84	7.4	422	375	----	----	----	----	39	----
52	10/28/84	7.2	446	397	----	----	----	----	39	36
53	10/29/84	7.0	402	281	----	----	----	----	25	----
54	10/30/84	6.6	414	354	7.6	4.5	125	114	48	40
55	10/31/84	5.9	436	375	----	----	----	----	66	----
56	11/01/84	6.1	474	351	----	----	127	114	90	47
58	11/03/84	6.8	497	263	----	----	128	96	153	117
59	11/04/84	7.5	575	378	----	----	142	107	98	80
60	11/05/84	7.8	564	412	28.8	5.1	130	122	90	60
62	11/07/84	7.2	446	305	----	----	----	----	50	----

(continued)

TABLE C-7. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
64	11/09/84	7.6	451	328	----	----	118	97	54	50
65	11/10/84	7.8	464	309	----	----	----	----	73	----
66	11/11/84	7.6	586	340	21.3	7.3	112	79.3	150	150
67	11/12/84	7.5	681	366	----	----	----	----	296	----
68	11/13/84	7.2	1390	441	----	----	----	----	710	580
69	11/14/84	7.4	3880	449	----	----	----	----	2270	----
70	11/15/84	7.4	3470	538	----	----	----	----	880	750
71	11/16/84	7.5	1180	368	----	----	----	----	570	----
72	11/17/84	7.4	957	326	----	----	----	----	515	375
73	11/18/84	7.7	1410	321	----	----	----	----	556	----
74	11/19/84	7.7	950	256	51	7.8	----	----	540	390
75	11/20/84	7.5	1480	347	----	----	----	----	740	----
76	11/21/84	7.2	2310	422	----	----	----	----	1310	----
77	11/22/84	7.4	5930	402	----	----	----	----	3400	----
78	11/23/84	7.5	482	333	----	----	----	----	103	90
79	11/24/84	7.6	400	326	----	----	----	----	85	----
80	11/25/84	7.6	368	305	----	----	----	----	88	68
81	11/26/84	7.6	400	321	----	----	----	----	80	66
83	11/28/84	7.4	451	347	13	8.3	----	----	93	70

*Dashes indicate no data recorded.

TABLE C-8. BTS-2 EFFLUENT ANALYTICAL DATA

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
3	09/09/84	7.7	857	695	54	16.8	----*	210	72	57
4	09/10/84	8.1	900	718	----	----	----	----	74	69
5	09/11/84	8.1	980	750	30	7.6	----	229	116	97
6	09/12/84	8.0	1060	844	----	----	299	237	140	118
7	09/13/84	8.0	1050	851	25.2	9.3	309	222	146	122
8	09/14/84	7.8	990	797	----	----	----	----	162	138
9	09/15/84	7.8	1000	721	----	----	----	----	124	100
10	09/16/84	7.8	1070	777	----	----	----	----	132	108
11	09/17/84	7.8	1010	781	25.2	6.65	260	200	140	108
12	09/18/84	7.8	996	734	----	----	----		180	144
13	09/19/84	7.2	879	507	27.6	5.4	164	110	410	----
14	09/20/84	7.1	922	469	----	----	----		300	266
15	09/21/84	7.7	797	390	----	----	----		286	----
16	09/22/84	7.7	764	397	----	----	----		236	----
17	09/23/84	7.6	756	356	----	----	----	91.3	260	236
18	09/24/84	8.0	967	361	----	----	----		382	----
19	09/25/84	8.2	1230	299	----	----	130	75.6	620	----
20	09/26/84	8.1	1020	321	----	----	----		480	----
21	09/27/84	8.1	640	247	----	----	----	69.2	250	198
22	09/28/84	7.9	541	302	----	----	----		143	----
23	09/29/84	7.8	551	328	----	----	107	67.3	234	142
24	09/30/84	7.8	523	305	----	----	----		132	----
25	10/01/84	7.7	541	351	----	----	109	68.2	85	59
26	10/02/84	7.2	422	328	----	----	----		48	----
27	10/03/84	7.2	351	286	5.2	4.1	93.7	83.4	50	42
28	10/04/84	7.3	543	356	----	----	----		55	----
29	10/05/84	7.8	316	247	----	----	----		28	----
30	10/06/84	7.9	419	337	----	----	----	----	53	----
31	10/07/84	8.0	632	520	7	4.9	137	99.7	31	23

(continued)

TABLE C-8. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
32	10/08/84	7.8	419	----	----	----	----	----	72	----
33	10/09/84	7.4	562	344	----	----	100	82.9	154	136
34	10/10/84	7.1	549	347	18.4	3	139	69	330	260
35	10/11/84	7.1	750	330	----	----	110	77.4	306	278
36	10/12/84	7.1	356	216	7.6	3	96.7	73.2	64	54
37	10/13/84	6.4	570	261	----	----	151	85.9	210	196
38	10/14/84	6.5	538	218	----	----	106	62	188	154
39	10/15/84	7.3	482	218	13.7	3.9	108	69.3	138	118
40	10/16/84	7.6	500	273	----	----	103	68	160	118
41	10/17/84	7.1	538	321	21	15	102	71.9	80	54
42	10/18/84	7.3	543	261	----	----	96	62.4	198	168
43	10/19/84	7.0	580	236	----	----	109	78	203	183
44	10/20/84	6.6	530	232	21	5.2	112	71.9	175	149
45	10/21/84	6.6	507	265	----	----	104	76.9	200	162
46	10/22/84	6.5	474	293	----	----	98.5	64.7	144	126
47	10/23/84	6.6	528	236	9.6	2	100	56	260	188
48	10/24/84	6.2	361	203	----	----	----	----	103	----
49	10/25/84	6.5	538	247	20.4	2	----	82.4	224	192
50	10/26/84	7.5	375	216	----	----	----	----	70	----
51	10/27/84	7.5	----	----	----	----	----	----	53	----
52	10/28/84	7.9	380	279	----	----	100	88.3	66	60
53	10/29/84	7.9	302	138	----	----	----	----	37	----
54	10/30/84	7.2	309	179	9.6	2	----	64.1	90	78
55	10/31/84	6.2	214	179	----	----	----	----	54	----
56	11/01/84	6.2	----	181	----	----	----	44.7	43	17
57	11/02/84	6.2	232	127	----	----	----	----	68	----
58	11/03/84	6.5	223	106	----	----	----	41.4	43	33
59	11/04/84	7.0	371	234	----	----	56.8	39	112	92
60	11/05/84	7.4	286	234	19.2	7.8	62.5	53.6	73	73

(continued)

TABLE C-8. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
61	11/06/84	7.8	451	216	----	----	----	----	57	----
62	11/07/84	7.2	238	153	----	----	----	----	39	----
63	11/08/84	7.3	241	207	----	----	----	----	30	----
64	11/09/84	7.6	318	229	----	----	----	----	43	28
65	11/10/84	7.6	259	234	----	----	----	----	22	----
66	11/11/84	7.4	288	212	4.2	3.6	----	----	33	30
67	11/12/84	7.4	----	201	----	----	----	----	34	----
68	11/13/84	6.9	247	216	----	----	----	----	28	20
69	11/14/84	7.0	326	225	----	----	----	----	26	----
70	11/15/84	6.9	----	----	----	----	----	----	73	67
71	11/16/84	7.2	436	241	----	----	----	----	164	----
72	11/17/84	7.0	419	179	----	----	----	----	220	120
73	11/18/84	7.7	330	209	----	----	----	----	122	----
74	11/19/84	7.7	225	153	12.2	3.1	----	----	53	33
75	11/20/84	7.5	259	190	----	----	----	----	46	----
76	11/21/84	7.2	----	----	----	----	----	----	41	----
77	11/22/84	7.4	----	----	----	----	----	----	25	----
78	11/23/84	7.5	170	151	----	----	----	----	22	18
79	11/24/84	7.5	170	157	----	----	----	----	26	----
80	11/25/84	7.1	225	157	8.7	4.3	----	----	53	46
81	11/26/84	7.1	256	190	----	----	----	----	69	56
83	11.28.84	7.2	347	205	14	7.7	----	----	110	80

*Dashes indicate no data recorded.

TABLE C-9. BTS-3 EFFLUENT ANALYTICAL DATA

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
3	09/09/84	8.0	833	687	80	23.4	244	----*	88	80
4	09/10/84	8.1	1290	961	----	----	370	----	150	138
5	09/11/84	8.1	983	773	84	36	325	232	114	102
6	09/12/84	8.3	1220	913	----	----	----	283	167	138
7	09/13/84	8.2	1100	913	44.4	9.2	340	261	126	116
8	09/14/84	8.3	1020	882	----	----	----	----	99	96
9	09/15/84	8.3	1540	776	----	----	----	----	560	410
10	09/16/84	8.2	1640	877	----	----	----	----	580	440
11	09/17/84	8.2	1660	891	125	28	443	259	570	430
12	09/18/84	8.1	2590	842	----	----	----	----	1420	1250
13	09/19/84	8.2	2450	860	252	14.5	329	258	1460	----
14	09/20/84	8.0	1060	957	----	----	----	----	91	76
15	09/21/84	8.3	929	863	----	----	----	----	56	----
16	09/22/84	8.4	1070	961	----	----	----	----	56	----
17	09/23/84	8.3	1140	941	----	----	----	264	87	80
18	09/24/84	8.4	1200	998	----	----	----	----	84	----
19	09/25/84	8.4	1260	976	----	----	348	250	98	----
20	09/26/84	8.7	1270	1010	----	----	----	----	108	----
21	09/27/84	8.5	1300	1020	----	----	346	272	145	130
22	09/28/84	8.5	1270	1060	----	----	----	----	123	----
23	09/29/84	8.5	1300	1110	----	----	360	298	130	102
24	09/30/84	8.5	1140	957	----	----	----	----	83	----
25	10/01/84	8.4	----	----	----	----	296	267	38	35
26	10/02/84	8.6	1100	1010	----	----	----	----	100	----
27	10/03/84	8.3	1360	1060	67.2	16.5	297	227	430	330
28	10/04/84	8.4	1000	888	----	----	----	----	108	----
29	10/05/84	8.2	----	----	----	----	----	----	80	----
30	10/06/84	8.1	----	875	----	----	----	----	----	----
31	10/07/84	8.3	1260	926	41.8	27.3	334	247	89	59

(continued)

TABLE C-9. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
32	10/08/84	8.4	1070	----	----	----	----	----	69	----
33	10/09/84	8.4	1060	824	----	----	287	237	72	67
34	10/10/84	8.1	983	929	26.7	5.5	265	226	120	97
35	10/11/84	8.1	1130	866	----	----	284	223	148	128
36	10/12/84	8.0	1190	812	37.5	8	272	236	232	192
37	10/13/84	7.7	1160	803	----	----	309	194	273	227
38	10/14/84	8.0	1060	732	----	----	267	211	180	140
39	10/15/84	8.0	1090	919	25.5	8.5	270	236	89	63
40	10/16/84	8.0	1030	910	----	----	284	218	90	55
41	10/17/84	7.4	1160	862	33	16	314	245	133	74
42	10/18/84	7.6	1180	863	----	----	310	223	132	115
43	10/19/84	7.1	1060	773	----	----	285	221	146	117
44	10/20/84	6.4	1020	797	19.5	4.7	363	253	112	88
45	10/21/84	6.5	1120	851	----	----	282	224	104	74
46	10/22/84	6.4	932	744	----	----	273	211	100	80
47	10/23/84	6.7	894	684	15.7	6	287	197	148	75
48	10/24/84	6.6	843	681	----	----	----	----	118	----
49	10/25/84	6.7	863	738	16	9	----	----	98	78
50	10/26/84	6.9	812	718	----	----	----	----	42	----
51	10/27/84	7.0	751	694	----	----	----	----	57	----
52	10/28/84	7.0	869	759	----	----	258	241	52	51
53	10/29/84	6.9	833	604	----	----	----	----	128	----
54	10/30/84	6.6	869	687	12.5	9	257	232	70	48
55	10/31/84	6.4	803	747	----	----	----	----	85	----
56	11/01/84	6.4	803	715	----	----	247	230	92	44
57	11/02/84	6.5	800	613	----	----	----	----	100	----
58	11/03/84	6.5	769	599	----	----	299	198	77	53
59	11/04/84	6.5	800	712	----	----	227	206	64	46
60	11/05/84	7.0	806	753	21.1	6.8	264	236	75	40

(continued)

TABLE C-9. (continued)

Day	Date	pH	TCOD (mg/l)	SCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TOC (mg/l)	STOC (mg/l)	TSS (mg/l)	VSS (mg/l)
61	11/06/84	7.3	980	721	----	----	----	----	65	----
62	11/07/84	7.0	894	645	----	----	----	----	50	----
63	11/08/84	7.2	712	659	----	----	----	----	55	----
64	11/09/84	7.5	721	684	----	----	----	192	50	46
65	11/10/84	7.6	753	690	----	----	----	----	23	----
66	11/11/84	7.6	803	684	9.6	5.9	220	199	68	50
67	11/12/84	7.2	744	656	----	----	----	----	104	----
68	11/13/84	6.5	860	681	----	----	----	----	100	78
69	11/14/84	6.9	1010	727	----	----	----	----	120	----
70	11/15/84	6.5	769	659	----	----	----	----	137	104
71	11/16/84	6.9	776	693	----	----	----	----	128	----
72	11/17/84	7.7	794	618	----	----	----	----	145	95
73	11/18/84	7.7	693	626	----	----	----	----	100	----
74	11/19/84	7.4	634	492	15.2	3.5	----	----	70	56
75	11/20/84	7.1	659	530	----	----	----	----	70	----
76	11/21/84	6.8	578	538	----	----	----	----	63	----
77	11/22/84	7.1	727	604	----	----	----	----	190	----
78	11/23/84	7.3	632	541	----	----	----	----	75	58
79	11/24/84	6.8	648	507	----	----	----	----	93	----
80	11/25/84	6.5	710	549	26.7	8.9	----	----	164	142
81	11/26/84	7.5	1300	738	----	----	----	----	590	485
82	11/27/84	7.9	785	515	26	15.1	----	----	253	198
83	11/28/84	7.7	712	632	17	12	----	----	128	93

*Dashes indicate no data recorded.

TABLE C-10. BTS-1 AVERAGE DAILY FLOWS

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
1	09/07/84	1.36	0.0	1.20	0.000
2	09/08/84	1.33	0.0	1.20	.341
3	09/09/84	1.35	0.0	1.20	.412
4	09/10/84	1.37	0.0	1.20	.437
5	09/11/84	1.37	0.0	1.69	.407
6	09/12/84	1.36	0.0	2.27	.391
7	09/13/84	1.34	0.0	2.34	.397
8	09/14/84	1.39	0.0	2.29	.463
9	09/15/84	1.36	0.0	2.80	.343
10	09/16/84	1.36	0.0	2.84	.304
11	09/17/84	1.37	8.5	2.84	.439
12	09/18/84	1.38	11.4	2.84	.423
13	09/19/84	1.39	16.5	2.84	.416
14	09/20/84	1.35	18.0	2.84	.414
15	09/21/84	1.40	18.1	2.84	.413
16	09/22/84	1.38	18.2	2.84	.421
17	09/23/84	1.37	18.3	3.19	.419
18	09/24/84	1.37	18.1	3.24	.408
19	09/25/84	1.36	18.0	3.24	.435
20	09/26/84	1.37	17.6	3.33	.411
21	09/27/84	1.36	17.9	4.32	.405
22	09/28/84	1.35	9.9	3.79	.389
23	09/29/84	1.36	17.9	3.79	.412
24	09/30/84	1.35	18.0	3.79	.443
25	10/01/84	1.35	18.0	3.79	.381
26	10/02/84	1.38	18.4	3.79	.394
27	10/03/84	1.38	18.2	3.79	.414
28	10/04/84	1.37	18.0	3.79	.430

continued

TABLE C-10. (continued)

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
29	10/05/84	1.37	18.0	3.79	.201
30	10/06/84	1.34	17.8	4.10	.064
31	10/07/84	1.29	18.4	4.54	0.000
32	10/08/84	1.31	18.8	4.54	.328
33	10/09/84	1.32	18.6	4.54	.426
34	10/10/84	1.34	18.5	4.54	.424
35	10/11/84	1.37	18.5	2.52	.422
36	10/12/84	1.31	17.9	2.00	.420
37	10/13/84	1.32	18.2	1.95	.414
38	10/14/84	1.25	18.4	2.54	.447
39	10/15/84	1.26	18.2	5.18	.068
40	10/16/84	1.34	18.2	3.90	.758
41	10/17/84	1.32	18.7	2.73	.426
42	10/18/84	1.36	19.0	2.83	.414
43	10/19/84	1.36	18.9	2.84	.421
44	10/20/84	1.38	18.2	2.84	.429
45	10/21/84	1.38	18.5	2.84	.418
46	10/22/84	1.37	18.4	2.74	.401
47	10/23/84	1.38	18.1	2.73	.417
48	10/24/84	1.35	27.5	2.73	.393
49	10/25/84	1.37	31.4	2.73	.403
50	10/26/84	1.37	30.6	3.81	.403
51	10/27/84	1.37	31.1	3.93	.414
52	10/28/84	1.36	32.2	4.23	.405
53	10/29/84	1.38	31.6	4.34	.411
54	10/30/84	1.38	31.0	4.10	.404
55	10/31/84	1.38	31.0	4.09	.407
56	11/01/84	1.38	31.2	2.31	.429

continued

TABLE C-10. (continued)

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
57	11/02/84	1.38	31.3	1.86	.422
58	11/03/84	1.37	31.5	2.72	.412
59	11/04/84	1.37	31.9	2.92	.419
60	11/05/84	1.38	32.0	3.35	.421
61	11/06/84	1.38	31.8	2.13	.400
62	11/07/84	1.37	31.3	3.45	.411
63	11/08/84	1.38	30.5	4.22	.425
64	11/09/84	1.38	30.5	3.50	.417
65	11/10/84	1.37	32.8	4.04	.424
66	11/11/84	1.37	31.5	3.50	.367
67	11/12/84	1.38	31.3	7.48	.406
68	11/13/84	1.37	31.3	7.03	.410
69	11/14/84	1.37	31.5	7.35	.398
70	11/15/84	1.39	31.9	7.95	.037
71	11/16/84	1.36	32.0	7.75	0.000
72	11/17/84	1.33	32.2	6.58	0.000
73	11/18/84	1.35	32.1	5.17	0.000
74	11/19/84	1.39	31.9	4.17	0.000
75	11/20/84	1.39	31.9	3.23	0.000
76	11/21/84	1.41	32.8	3.19	0.000
77	11/22/84	1.37	31.4	3.41	0.000
78	11/23/84	1.33	31.0	3.41	0.000
79	11/24/84	1.40	31.0	3.41	0.000
80	11/25/84	1.43	31.0	4.31	0.000
81	11/26/84	1.46	31.4	2.21	0.000
82	11/27/84	1.36	31.3	3.68	0.000
83	11/28/84	1.24	30.8	2.88	0.000
84	11/29/84	0.00	0.0	0.00	0.000

TABLE C-11. BTS-2 AVERAGE DAILY FLOWS

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
1	09/07/84	1.29	0.0	1.26	0.000
2	09/08/84	1.30	0.0	1.26	.274
3	09/09/84	1.28	0.0	2.05	.368
4	09/10/84	1.29	0.0	2.64	.386
5	09/11/84	1.28	0.0	2.64	.372
6	09/12/84	1.26	0.0	2.27	.358
7	09/13/84	1.27	0.0	2.27	.374
8	09/14/84	1.24	0.0	2.27	.376
9	09/15/84	1.30	0.0	2.70	.365
10	09/16/84	1.33	0.0	2.84	.386
11	09/17/84	1.30	7.9	2.84	.382
12	09/18/84	1.29	17.4	2.84	.504
13	09/19/84	1.26	18.0	2.84	.377
14	09/20/84	1.29	18.0	2.84	.285
15	09/21/84	1.27	18.2	2.84	.348
16	09/22/84	1.29	18.3	2.84	.376
17	09/23/84	1.30	18.1	2.84	.382
18	09/24/84	1.29	18.1	2.84	.374
19	09/25/84	1.26	16.7	2.84	.376
20	09/26/84	1.26	17.4	3.07	.341
21	09/27/84	1.29	18.4	2.89	.384
22	09/28/84	1.28	18.3	2.84	.387
23	09/29/84	1.25	18.0	2.84	.391
24	09/30/84	1.29	18.5	2.84	.392
25	10/01/84	1.27	18.5	3.75	.371
26	10/02/84	1.26	18.3	4.01	.364
27	10/03/84	1.29	18.4	4.30	.372
28	10/04/84	1.29	18.5	4.54	.357

(continued)

TABLE C-11. (continued)

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
29	10/05/84	1.28	18.5	4.90	.221
30	10/06/84	1.27	18.6	4.13	.315
31	10/07/84	1.30	18.6	1.72	.260
32	10/08/84	1.27	18.5	1.83	.341
33	10/09/84	1.21	18.5	2.27	.372
34	10/10/84	1.28	18.9	2.27	.374
35	10/11/84	1.32	18.6	2.47	.357
36	10/12/84	1.25	17.9	2.77	.354
37	10/13/84	1.20	18.2	3.30	.344
38	10/14/84	1.21	18.4	3.78	.342
39	10/15/84	1.18	18.5	3.56	.389
40	10/16/84	1.28	18.5	3.85	.376
41	10/17/84	1.28	18.7	3.89	.353
42	10/18/84	1.29	18.8	3.85	.369
43	10/19/84	1.28	18.5	3.14	.383
44	10/20/84	1.28	18.2	4.66	.386
45	10/21/84	1.28	18.4	3.89	.340
46	10/22/84	1.27	18.4	6.28	.372
47	10/23/84	1.27	18.0	6.49	.400
48	10/24/84	1.17	23.9	6.49	.387
49	10/25/84	1.25	31.1	6.97	.326
50	10/26/84	1.28	32.1	6.57	.385
51	10/27/84	1.28	32.0	7.35	.393
52	10/28/84	1.28	32.0	6.57	.337
53	10/29/84	1.29	31.7	6.69	.336
54	10/30/84	1.29	31.0	3.53	.370
55	10/31/84	1.29	31.3	3.34	.410
56	11/01/84	1.27	31.9	4.30	.365

(continued)

TABLE C-11. (continued)

Day	Date	Feed (l/min)	PAC Slurry (ml/min)	Return Sludge (l/min)	Waste Mixed Liquor (l/min)
57	11/02/84	1.29	31.8	4.54	.364
58	11/03/84	1.29	31.8	4.96	.378
59	11/04/84	1.29	31.8	5.05	.400
60	11/05/84	1.29	31.3	5.59	.365
61	11/06/84	1.29	30.6	5.68	.383
62	11/07/84	1.28	29.7	5.14	.375
63	11/08/84	1.30	31.4	5.05	.383
64	11/09/84	1.29	31.3	4.76	.388
65	11/10/84	1.29	28.2	5.02	.389
66	11/11/84	1.28	31.0	5.05	.369
67	11/12/84	1.28	31.0	4.74	.420
68	11/13/84	1.28	30.8	5.01	.376
69	11/14/84	1.28	31.5	5.05	.368
70	11/15/84	1.30	32.6	4.48	.369
71	11/16/84	1.29	31.8	10.80	.336
72	11/17/84	1.24	31.0	6.62	.382
73	11/18/84	1.26	30.7	5.76	.379
74	11/19/84	1.26	31.3	5.81	.375
75	11/20/84	1.28	32.3	4.33	.379
76	11/21/84	1.29	32.3	4.88	.390
77	11/22/84	1.29	32.0	5.05	.407
78	11/23/84	1.25	32.0	5.93	.397
79	11/24/84	1.26	32.0	6.06	.392
80	11/25/84	1.27	31.8	5.41	.381
81	11/26/84	1.40	31.6	4.55	.385
82	11/27/84	1.31	32.4	4.54	.343
83	11/28/84	1.23	33.2	3.74	.327
84	11/29/84	0.00	0.0	0.00	0.000

TABLE C-12. BTS-3 AVERAGE DAILY FLOWS

Day	Date	Feed (ml/min)	PAC Slurry (ml/min)	Return Sludge (ml/min)	Waste Mixed Liquor (ml/min)
1	09/07/84	45	0	45	0
2	09/08/84	45	0	328	11
3	09/09/84	48	0	331	13
4	09/10/84	46	0	370	12
5	09/11/84	46	0	227	14
6	09/12/84	45	0	169	13
7	09/13/84	45	0	189	13
8	09/14/84	45	0	194	12
9	09/15/84	56	0	245	13
10	09/16/84	48	0	248	13
11	09/17/84	44	0	203	14
12	09/18/84	45	0	196	14
13	09/19/84	43	0	191	14
14	09/20/84	47	0	190	12
15	09/21/84	46	0	190	17
16	09/22/84	48	0	187	16
17	09/23/84	45	0	189	13
18	09/24/84	45	0	190	12
19	09/25/84	46	0	190	13
20	09/26/84	42	0	190	13
21	09/27/84	47	0	190	12
22	09/28/84	47	0	190	14
23	09/29/84	47	0	190	13
24	09/30/84	46	0	190	12
25	10/01/84	47	0	192	13
26	10/02/84	46	0	212	12
27	10/03/84	42	0	218	12
28	10/04/84	44	0	220	13

continued

TABLE C-12. (continued)

Day	Date	Feed (ml/min)	PAC Slurry (ml/min)	Return Sludge (ml/min)	Waste Mixed Liquor (ml/min)
29	10/05/84	48	0	222	14
30	10/06/84	48	0	223	12
31	10/07/84	44	0	220	13
32	10/08/84	43	0	226	12
33	10/09/84	44	0	220	12
34	10/10/84	48	0	208	11
35	10/11/84	46	0	118	13
36	10/12/84	43	0	181	15
37	10/13/84	44	0	191	13
38	10/14/84	49	0	211	13
39	10/15/84	43	0	198	13
40	10/16/84	43	0	200	13
41	10/17/84	44	0	198	13
42	10/18/84	36	0	204	13
43	10/19/84	43	0	124	12
44	10/20/84	44	0	124	11
45	10/21/84	43	0	120	13
46	10/22/84	43	0	120	13
47	10/23/84	44	0	89	13
48	10/24/84	44	0	81	13
49	10/25/84	46	0	91	13
50	10/26/84	40	0	96	13
51	10/27/84	41	0	93	14
52	10/28/84	44	0	97	13
53	10/29/84	45	0	96	11
54	10/30/84	45	0	92	12
55	10/31/84	44	0	90	12
56	11/01/84	44	0	95	12

continued

TABLE C-12. (continued)

Day	Date	Feed (ml/min)	PAC Slurry (ml/min)	Return Sludge (ml/min)	Waste Mixed Liquor (ml/min)
57	11/02/84	44	0	90	13
58	11/03/84	42	0	92	13
59	11/04/84	44	0	95	14
60	11/05/84	45	0	92	13
61	11/06/84	44	0	93	13
62	11/07/84	51	0	92	12
63	11/08/84	37	0	90	13
64	11/09/84	53	0	93	13
65	11/10/84	39	0	93	14
66	11/11/84	51	0	95	13
67	11/12/84	40	0	93	13
68	11/13/84	49	0	94	13
69	11/14/84	48	0	94	13
70	11/15/84	40	0	96	12
71	11/16/84	41	0	95	13
72	11/17/84	44	0	97	13
73	11/18/84	45	0	95	13
74	11/19/84	45	0	93	13
75	11/20/84	44	0	91	12
76	11/21/84	43	0	92	13
77	11/22/84	47	0	95	13
78	11/23/84	41	0	84	13
79	11/24/84	45	0	87	14
80	11/25/84	44	0	92	13
81	11/26/84	43	0	96	13
82	11/27/84	42	0	90	12
83	11/28/84	38	0	90	12
84	11/29/84	0	0	0	0

TABLE C-13. SLUDGE VOLUME INDEX VALUES (9-9-84 to 11-13-84)

DATE (1984)	SVI (ml/g)			DATE (1984)	SVI (ml/g)		
	BTS-1	BTS-2	BTS-3		BTS-1	BTS-2	BTS-3
9-9	257	254	292	10-17	177	124	196
9-14	221	221	244	10-19	173	127	219
9-22	189	147	273	10-20	171	128	229
9-27	214	133	297	10-21	174	129	235
9-28	177	127	280	10-22	180	145	245
9-29	175	- *	249	10-23	170	144	235
10-1	-	-	286	10-24	184	133	240
10-2	176	143	309	10-25	179	96	245
10-5	-	-	332	10-26	171	126	248
10-8	160	124	198	10-27	160	109	223
10-9	170	128	194	11-1	153	111	228
10-10	174	157	158	11-5	143	117	213
10-11	179	119	198	11-7	155	138	215
10-12	179	128	198	11-8	132	123	198
10-13	175	126	214	11-9	140	121	204
10-14	170	124	188	11-11	146	120	201
10-15	152	122	183	11-13	170	118	187
10-16	147	118	158				

*Dashes indicate SVI values not calculated.

TABLE C-14. CLARIFIER SLUDGE DEPTH

Day	Date	Sludge Blanket Depth* (m)			Estimated Sludge Volume** (l)		
		BTS-1	BTS-2	BTS-3	BTS-1	BTS-2	BTS-3
1	09/07/84	0.95	0.80	***	745	556	-
2	09/08/84	-	-	-	-	-	-
3	09/09/84	-	-	-	-	-	-
4	09/10/84	0.87	0.65	-	647	356	-
5	09/11/84	0.72	0.80	-	447	556	-
6	09/12/84	0.79	0.65	-	545	356	-
7	09/13/84	0.64	0.80	-	344	556	-
8	09/14/84	0.49	0.65	-	159	356	-
9	09/15/84	-	-	-	-	-	-
10	09/16/84	0.44	0.45	0.62	114	121	36
11	09/17/84	-	-	0.62	-	-	36
12	09/18/84	0.49	-	0.62	159	-	36
13	09/19/84	-	-	#	-	-	#
14	09/20/84	0.57	-	-	246	-	-
15	09/21/84	-	0.42	-	-	102	-
16	09/22/84	0.64	0.42	-	344	102	-
17	09/23/84	1.10	0.50	-	946	166	-
18	09/24/84	1.25	0.42	-	1150	102	-
19	09/25/84	-	-	-	-	-	-
20	09/26/84	0.34	0.50	-	53	166	-
21	09/27/84	-	0.50	-	-	166	-
22	09/28/84	-	0.35	-	-	57	-
23	09/29/84	-	0.35	-	-	57	-
24	09/30/84	-	0.50	-	-	166	-
25	10/01/84	-	0.58	-	-	257	-
26	10/02/84	-	0.50	-	-	166	-
27	10/03/84	-	0.58	-	-	257	-
28	10/04/84	-	0.65	-	-	356	-
29	10/05/84	-	0.58	-	-	257	-

(continued)

TABLE C-14. (continued)

Day	Date	Sludge Blanket Depth* (m)			Estimated Sludge Volume** (l)		
		BTS-1	BTS-2	BTS-3	BTS-1	BTS-2	BTS-3
30	10/06/84	-	-	-	-	-	-
31	10/07/84	0.57	-	-	246	-	-
32	10/08/84	-	-	-	-	-	-
33	10/09/84	-	-	-	-	-	-
34	10/10/84	-	-	-	-	-	-
35	10/11/84	0.34	0.35	-	53	-	-
36	10/12/84	0.83	0.67	-	587	386	-
37	10/13/84	0.52	0.67	-	189	386	-
38	10/14/84	0.52	0.52	-	189	189	-
39	10/15/84	0.60	0.52	0.43	284	189	11.7
40	10/16/84	0.37	0.52	0.42	68	189	10.7
41	10/17/84	0.37	0.52	0.35	68	189	6.2
42	10/18/84	0.67	0.60	-	386	284	-
43	10/19/84	0.37	0.52	0.22	68	189	1.6
44	10/20/84	0.60	0.52	0.15	284	189	0.56
45	10/21/84	0.44	0.52	-	117	189	-
46	10/22/84	0.37	0.52	0.20	68	189	1.4
47	10/23/84	0.37	0.52	0.30	68	189	4.4
48	10/24/84	0.22	0.29	0.15	15	34	0.56
49	10/25/84	0.22	0.37	0.15	15	68	0.56
50	10/26/84	0.52	0.52	0.23	189	189	1.9
51	10/27/84	0.37	0.37	0.30	68	68	4.4
52	10/28/84	0.37	0.44	-	68	117	-
53	10/29/84	0.22	0.67	-	15	386	-
54	10/30/84	0.83	0.67	0.30	587	386	4.4
55	10/31/84	-	-	-	-	-	-
56	11/01/84	0.44	0.44	-	117	117	-
57	11/02/84	0.37	0.52	0.30	68	189	4.4
58	11/03/84	0.98	0.67	-	787	386	-

(continued)

TABLE C-14. (continued)

Day	Date	Sludge Blanket Depth* (m)			Estimated Sludge Volume** (l)		
		BTS-1	BTS-2	BTS-3	BTS-1	BTS-2	BTS-3
59	11/04/84	0.75	0.44	-	477	117	-
60	11/05/84	0.60	0.37	-	284	68	-
61	11/06/84	0.83	0.52	-	587	189	-
62	11/07/84	0.83	0.52	0.15	587	189	0.56
63	11/08/84	0.90	0.52	0.15	685	189	0.56
64	11/09/84	-	0.67	0.20	-	386	1.35
65	11/10/84	0.52	0.67	-	189	386	-
66	11/11/84	0.98	0.37	-	787	68	-
67	11/12/84	1.28	0.67	-	1190	386	-
68	11/13/84	1.28	0.67	-	1190	386	-
69	11/14/84	0.98	0.67	-	787	386	-
70	11/15/84	0.98	0.67	-	787	386	-
71	11/16/84	-	-	-	-	-	-
72	11/17/84	-	0.52	-	-	189	-
73	11/18/84	-	0.37	-	-	68	-
74	11/19/84	0.98	0.52	-	787	189	-
75	11/20/84	-	0.37	-	-	68	-
76	11/21/84	-	1.28	-	-	1190	-
77	11/22/84	-	1.28	0.20	-	1190	1.35
78	11/23/84	-	-	-	-	-	-
79	11/24/84	-	-	0.30	-	-	4.4
80	11/25/84	-	-	0.30	-	-	4.4
81	11/26/84	-	1.05	-	-	886	-
82	11/27/84	-	-	-	-	-	-
83	11/28/84	-	0.83	-	-	587	-
84	11/29/84	0.22	0.67	-	15	765	-

(continued)

TABLE C-14. (continued)

* Maximum water depth for BTS-1 and BTS-2 clarifiers = 2.20m.
Maximum water depth for BTS-3 clarifier = 0.62m.

** Maximum water capacity for BTS-1 and BTS-2 clarifiers = 2160 l.
Maximum water capacity for BTS-3 clarifier = 36.1 l.

# Single clarifier used before and after this period.
Two clarifiers operated in parallel from 09/19/84 to 10/14/84.

*** Dashes indicate no data taken at that time.

TABLE C-15. BTS-1 OPERATIONAL DATA

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
1	09/07/84	1.36	3.03	--*	0
2	09/08/84	1.33	3.11	11.5	0
3	09/09/84	1.35	3.05	9.7	0
4	09/10/84	1.37	3.01	9.1	0
5	09/11/84	1.37	3.01	9.8	0
6	/84	1.36	3.03	10.2	0
7	09/13/84	1.34	3.07	10.1	0
8	09/14/84	1.39	2.98	8.6	0
9	09/15/84	1.36	3.04	11.6	0
10	09/16/84	1.36	3.04	13.0	0
11	09/17/84	1.37	3.02	9.1	94
12	09/18/84	1.38	3.00	9.3	125
13	09/19/84	1.39	2.97	9.2	180
14	09/20/84	1.35	3.05	8.8	201
15	09/21/84	1.40	2.94	9.5	195
16	09/22/84	1.38	2.99	9.4	199
17	09/23/84	1.37	3.01	9.2	201
18	09/24/84	1.37	3.02	6.2	201
19	09/25/84	1.36	3.04	5.8	201
20	09/26/84	1.37	3.02	6.9	194
21	09/27/84	1.36	3.03	8.4	199
22	09/28/84	1.35	3.06	10.3	112
23	09/29/84	1.36	3.04	9.7	199
24	09/30/84	1.35	3.05	9.1	201
25	10/01/84	1.35	3.06	--	202
26	10/02/84	1.38	2.99	10.2	201
27	10/03/84	1.38	2.99	9.8	199
28	10/04/84	1.37	3.01	9.5	198
29	10/05/84	1.37	3.01	19.9	199

(continued)

TABLE C-15. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
30	10/06/84	1.34	3.07	58.8	200
31	10/07/84	1.29	3.20	--	216
32	10/08/84	1.31	3.16	12.1	218
33	10/09/84	1.32	3.14	9.3	213
34	10/10/84	1.34	3.07	9.5	208
35	10/11/84	1.37	3.00	9.6	204
36	10/12/84	1.31	3.15	9.6	206
37	10/13/84	1.32	3.12	9.5	208
38	10/14/84	1.25	3.29	9.0	222
39	10/15/84	1.26	3.28	51.5	219
40	10/16/84	1.34	3.08	5.4	206
41	10/17/84	1.32	3.14	9.5	215
42	10/18/84	1.36	3.03	9.8	210
43	10/19/84	1.36	3.04	9.6	210
44	10/20/84	1.38	3.00	9.4	200
45	10/21/84	1.38	3.00	9.6	203
46	10/22/84	1.37	3.01	9.9	202
47	10/23/84	1.38	2.99	9.1	198
48	10/24/84	1.35	3.07	9.6	308
49	10/25/84	1.37	3.01	8.7	499
50	10/26/84	1.37	3.01	9.6	486
51	10/27/84	1.37	3.02	9.8	497
52	10/28/84	1.36	3.04	10.0	518
53	10/29/84	1.38	3.00	10.0	500
54	10/30/84	1.38	3.00	10.0	492
55	10/31/84	1.38	2.99	9.9	490
56	11/01/84	1.38	2.98	9.3	491
57	11/02/84	1.38	3.00	9.8	495
58	11/03/84	1.37	3.01	9.4	500

(continued)

TABLE C-15. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
59	11/04/84	1.37	3.00	9.5	507
60	11/05/84	1.38	2.99	9.5	506
61	11/06/84	1.38	2.99	10.3	503
62	11/07/84	1.37	3.01	9.9	498
63	11/08/84	1.38	2.99	9.7	482
64	11/09/84	1.38	3.00	9.7	484
65	11/10/84	1.37	3.01	9.5	522
66	11/11/84	1.37	3.01	10.6	501
67	11/12/84	1.38	3.00	9.1	495
68	11/13/84	1.37	3.00	7.8	496
69	11/14/84	1.37	3.00	5.1	499
70	11/15/84	1.39	2.98	14.6	501
71	11/16/84	1.36	3.03	--	513
72	11/17/84	1.33	3.10	--	527
73	11/18/84	1.35	3.05	--	518
74	11/19/84	1.39	2.96	--	499
75	11/20/84	1.39	2.96	--	499
76	11/21/84	1.41	2.93	--	508
77	11/22/84	1.37	3.00	--	498
78	11/23/84	1.33	3.09	--	507
79	11/24/84	1.40	2.94	--	482
80	11/25/84	1.43	2.89	--	473
81	11/26/84	1.46	2.83	--	469
82	11/27/84	1.36	3.04	--	502
83	11/28/84	1.24	3.34	--	543

*Dashes indicate no data taken.

TABLE C-16. BTS-1 ANALYTICAL DATA-SOLIDS

Day	Date	FEED		EFFLUENT		ML
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)
1	09/07/84	1300	628	--*	--	--
2	09/08/84	640	530	72	--	3810
3	09/09/84	559	420	58	43	4520
4	09/10/84	820	630	69	67	4320
5	09/11/84	612	440	80	62	4860
6	09/12/84	470	325	69	54	4680
7	09/13/84	695	535	59	50	4470
8	09/14/84	760	630	88	74	4440
9	09/15/84	325	235	56	48	4460
10	09/16/84	500	340	63	50	4760
11	09/17/84	555	350	66	50	4570
12	09/18/84	465	405	104	98	4970
13	09/19/84	655	--	180	--	5300
14	09/20/84	840	580	298	260	5200
15	09/21/84	650	--	124	--	5580
16	09/22/84	670	--	89	--	5200
17	09/23/84	1020	745	124	110	4120
18	09/24/84	1050	--	900	--	3460
19	09/25/84	590	--	1220	--	4080
20	09/26/84	1320	--	900	--	4640
21	09/27/84	840	440	420	240	4860
22	09/28/84	447	--	78	--	5540
23	09/29/84	587	440	90	61	5660
24	09/30/84	650	--	64	--	5820
25	10/01/84	360	240	53	42	--
26	10/02/84	590	--	51	--	5600
27	10/03/84	1060	800	32	27	6060
28	10/04/84	440	--	29	--	5640

(continued)

TABLE C-16. (continued)

Day	Date	FEED		EFFLUENT		ML
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)
29	10/05/84	630	--	34	--	6580
30	10/06/84	630	--	27	--	5440
31	10/07/84	720	440	62	51	5720
32	10/08/84	560	--	77	--	5960
33	10/09/84	890	670	102	90	5720
34	10/10/84	500	400	64	50	5560
35	10/11/84	1000	720	47	41	5400
36	10/12/84	770	540	48	41	5350
37	10/13/84	560	410	110	86	5580
38	10/14/84	625	435	70	58	5780
39	10/15/84	1180	720	64	49	6480
40	10/16/84	590	400	154	76	6700
41	10/17/84	790	440	61	48	5590
42	10/18/84	760	540	56	49	7000
43	10/19/84	620	530	67	54	5790
44	10/20/84	950	640	59	49	5800
45	10/21/84	740	540	71	56	5650
46	10/22/84	370	280	96	64	5500
47	10/23/84	467	240	222	122	5760
48	10/24/84	550	--	210	--	5280
49	10/25/84	750	590	393	327	5480
50	10/26/84	660	--	140	--	5700
51	10/27/84	510	--	39	--	6120
52	10/28/84	333	327	39	36	6580
53	10/29/84	580	--	25	--	6300
54	10/30/84	460	353	48	40	6460
55	10/31/84	630	--	66	--	6340
56	11/01/84	760	380	90	47	6360

(continued)

TABLE C-16. (continued)

Day	Date	FEED		EFFLUENT		ML
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)
57	11/02/84	390	--	--	--	6280
58	11/03/84	610	520	153	117	6100
59	11/04/84	710	560	98	80	6860
60	11/05/84	330	170	90	60	6860
61	11/06/84	480	--	--	--	6760
62	11/07/84	390	--	50	--	6340
63	11/08/84	1300	--	--	--	7480
64	11/09/84	520	380	54	50	7020
65	11/10/84	450	--	73	--	7180
66	11/11/84	500	400	150	150	6920
67	11/12/84	470	--	296	--	6160
68	11/13/84	590	510	710	580	5820
69	11/14/84	920	--	2270	--	5540
70	11/15/84	390	320	880	750	4970
71	11/16/84	300	--	570	--	4110
72	11/17/84	600	430	515	375	6200
73	11/18/84	353	--	556	--	4810
74	11/19/84	200	140	540	390	4280
75	11/20/84	350	--	740	--	4110
76	11/21/84	580	--	1310	--	4370
77	11/22/84	680	--	3400	--	3890
78	11/23/84	790	530	103	90	3200
79	11/24/84	350	--	85	--	2080
80	11/25/84	1140	530	88	68	2140
81	11/26/84	520	380	80	66	3280
82	11/27/84	580	350	--	--	--
83	11/28/84	520	370	93	70	3840
84	11/29/84	--	--	--	--	--

*Dashes indicate no data taken.

TABLE C-17. BTS-1 ANALYTICAL DATA-TBOD & TCOD

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
1	09/07/84	3400	7770	--	--*	--	--
2	09/08/84	--	6130	--	--	776	--
3	09/09/84	3500	7450	52	9.8	818	687
4	09/10/84	--	8720	--	--	922	715
5	09/11/84	2700	7990	30.4	7.4	894	751
6	09/12/84	--	7530	--	--	919	788
7	09/13/84	2500	7240	19.8	--	916	833
8	09/14/84	--	8190	--	--	872	782
9	09/15/84	--	8390	--	--	891	715
10	09/16/84	--	8870	--	--	926	755
11	09/17/84	2000	5770	17.4	4.4	919	777
12	09/18/84	--	5350	--	--	863	683
13	09/19/84	3000	7700	16.8	5.7	785	596
14	09/20/84	--	7720	--	--	1080	634
15	09/21/84	--	6710	--	--	707	578
16	09/22/84	--	7180	--	--	712	578
17	09/23/84	--	7180	--	--	727	554
18	09/24/84	--	7500	--	--	1750	604
19	09/25/84	--	6750	--	--	2230	599
20	09/26/84	--	9840	--	--	1770	591
21	09/27/84	2900	7250	--	--	1060	528
22	09/28/84	--	7140	--	--	684	578
23	09/29/84	--	7010	--	--	656	523
24	09/30/84	--	5640	--	--	604	497
25	10/01/84	--	4850	--	--	--	--
26	10/02/84	--	6580	--	--	586	551
27	10/03/84	2300	6660	9.2	4.2	546	449
28	10/04/84	--	7660	--	--	530	528

(continued)

TABLE C-17. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
29	10/05/84	--	8720	--	--	538	468
30	10/06/84	--	12000	--	--	554	497
31	10/07/84	4100	8910	15	8	818	659
32	10/08/84	--	6330	--	--	634	--
33	10/09/84	--	7550	--	--	707	554
34	10/10/84	3000	10600	13.1	<4	562	476
35	10/11/84	--	6200	--	--	570	479
36	10/12/84	1900	6830	7.8	<3	578	424
37	10/13/84	--	9540	--	--	583	476
38	10/14/84	--	10100	--	--	504	431
39	10/15/84	3900	12000	16.6	3.6	605	472
40	10/16/84	--	11400	--	--	580	492
41	10/17/84	2200	8440	33	17	679	497
42	10/18/84	--	6890	--	--	570	476
43	10/19/84	--	6890	--	--	572	444
44	10/20/84	2500	6740	9.7	3.8	551	449
45	10/21/84	--	7030	--	--	578	451
46	10/22/84	--	5520	--	--	599	436
47	10/23/84	--	5510	15	3	659	419
48	10/24/84	--	8280	--	--	718	402
49	10/25/84	2500	6850	36	4	932	461
50	10/26/84	--	4060	--	--	690	400
51	10/27/84	--	8890	--	--	422	375
52	10/28/84	--	7030	--	--	446	397
53	10/29/84	--	6070	--	--	402	281
54	10/30/84	2100	5640	7.6	4.5	414	354
55	10/31/84	--	6170	--	--	436	375
56	11/01/84	--	2500	--	--	474	351

(continued)

TABLE C-17. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
57	11/02/84	--	2260	--	--	--	--
58	11/03/84	--	3980	--	--	497	263
59	11/04/84	--	4550	--	--	575	378
60	11/05/84	2800	3320	28.8	5.1	564	412
61	11/06/84	--	4680	--	--	--	--
62	11/07/84	--	6840	--	--	446	305
63	11/08/84	--	6780	--	--	--	--
64	11/09/84	3000	7140	--	--	451	328
65	11/10/84	--	8910	--	--	464	309
66	11/11/84	2900	7120	21.3	7.3	586	340
67	11/12/84	--	5800	--	--	681	366
68	11/13/84	--	9290	--	--	1390	441
69	11/14/84	--	7730	--	--	3880	449
70	11/15/84	--	5700	--	--	3470	538
71	11/16/84	--	6450	--	--	1180	368
72	11/17/84	--	7880	--	--	957	326
73	11/18/84	--	6870	--	--	1410	321
74	11/19/84	1700	4560	51	7.8	950	256
75	11/20/84	--	7830	--	--	1480	347
76	11/21/84	--	7260	--	--	2310	422
77	11/22/84	--	6660	--	--	5930	402
78	11/23/84	--	5280	--	--	482	333
79	11/24/84	--	4950	--	--	400	326
80	11/25/84	2300	5980	--	--	368	305
81	11/26/84	--	7550	--	--	400	321
82	11/27/84	3500	7990	--	--	--	--
83	11/28/84	--	--	13	8.3	451	347
84	11/29/84	--	--	--	--	--	--

*Dashes indicate no data taken.

TABLE C-18. BTS-2 OPERATIONAL DATA

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
1	09/07/84	1.29	3.00	--*	0
2	09/08/84	1.30	2.96	12.1	0
3	09/09/84	1.28	3.02	10.1	0
4	09/10/84	1.29	3.00	9.6	0
5	09/11/84	1.28	3.02	9.8	0
6	09/12/84	1.26	3.06	10.0	0
7	09/13/84	1.27	3.04	9.6	0
8	09/14/84	1.24	3.10	9.5	0
9	09/15/84	1.30	2.96	9.8	0
10	09/16/84	1.33	2.91	9.2	0
11	09/17/84	1.30	2.98	9.3	345
12	09/18/84	1.29	2.99	7.2	764
13	09/19/84	1.26	3.06	8.7	806
14	09/20/84	1.29	2.99	11.5	788
15	09/21/84	1.27	3.03	9.9	809
16	09/22/84	1.29	3.00	9.4	802
17	09/23/84	1.30	2.97	9.3	789
18	09/24/84	1.29	2.99	9.1	792
19	09/25/84	1.26	3.07	8.5	749
20	09/26/84	1.26	3.06	9.6	779
21	09/27/84	1.29	3.00	9.3	808
22	09/28/84	1.28	3.01	9.6	806
23	09/29/84	1.25	3.09	9.1	818
24	09/30/84	1.29	3.00	9.4	811
25	10/01/84	1.27	3.04	--	823
26	10/02/84	1.26	3.06	10.4	822
27	10/03/84	1.29	3.00	10.2	243
28	10/04/84	1.29	2.98	10.6	809
29	10/05/84	1.28	3.02	17.1	819

(continued)

TABLE C-18. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
30	10/06/84	1.27	3.03	12.0	826
31	10/07/84	1.30	2.98	14.6	811
32	10/08/84	1.27	3.03	11.0	821
33	10/09/84	1.21	3.18	9.9	861
34	10/10/84	1.28	3.02	--	837
35	10/11/84	1.32	2.93	9.8	798
36	10/12/84	1.25	3.08	10.7	807
37	10/13/84	1.20	3.22	10.5	860
38	10/14/84	1.21	3.19	10.6	863
39	10/15/84	1.18	3.26	9.6	884
40	10/16/84	1.28	3.01	9.8	815
41	10/17/84	1.28	3.02	10.6	828
42	10/18/84	1.29	3.00	9.8	826
43	10/19/84	1.28	3.00	9.5	816
44	10/20/84	1.28	3.02	9.5	805
45	10/21/84	1.28	3.02	10.6	814
46	10/22/84	1.27	3.03	9.8	814
47	10/23/84	1.27	3.05	8.9	806
48	10/24/84	1.17	3.29	9.7	1150
49	10/25/84	1.25	3.09	11.1	1530
50	10/26/84	1.28	3.01	9.8	1530
51	10/27/84	1.28	3.02	9.7	1530
52	10/28/84	1.28	3.01	11.2	1530
53	10/29/84	1.29	3.00	--	1510
54	10/30/84	1.29	2.99	10.1	1470
55	10/31/84	1.29	2.99	9.3	1490
56	11/01/84	1.27	3.03	10.4	1530
57	11/02/84	1.29	3.00	10.4	1510
58	11/03/84	1.29	2.99	10.1	1510

(continued)

TABLE C-18. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	PAC Dose (mg/l)
59	11/04/84	1.29	2.99	9.3	1510
60	11/05/84	1.29	2.99	10.3	1490
61	11/06/84	1.29	3.00	9.9	1460
62	11/07/84	1.28	3.01	10.2	1410
63	11/08/84	1.30	2.96	10.0	1480
64	11/09/84	1.29	2.99	9.8	1480
65	11/10/84	1.29	3.00	9.8	1340
66	11/11/84	1.28	3.01	10.4	1480
67	11/12/84	1.28	3.01	9.1	1480
68	11/13/84	1.28	3.01	10.2	1470
69	11/14/84	1.28	3.00	10.4	1500
70	11/15/84	1.30	2.97	10.2	1540
71	11/16/84	1.29	2.99	10.9	1510
72	11/17/84	1.24	3.11	9.5	1530
73	11/18/84	1.26	3.07	9.8	1500
74	11/19/84	1.26	3.05	10.1	1520
75	11/20/84	1.28	3.03	10.0	1550
76	11/21/84	1.29	2.99	9.8	1530
77	11/22/84	1.29	3.00	9.4	1520
78	11/23/84	1.25	3.10	9.7	1570
79	11/24/84	1.26	3.07	9.8	1560
80	11/25/84	1.27	3.05	9.9	1540
81	11/26/84	1.40	2.76	9.8	1390
82	11/27/84	1.31	2.94	10.0	1520
83	11/28/84	1.23	3.14	11.4	1650

*Dashes indicate no data taken.

TABLE C-19. BTS-2 ANALYTICAL DATA-SOLIDS

Day	Date	FEED		EFFLUENT		ML
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)
1	09/07/84	1300	628	--*	--	--
2	09/08/84	640	530	168	--	3860
3	09/09/84	559	420	72	57	4480
4	09/10/84	820	630	74	69	4680
5	09/11/84	612	440	116	97	5040
6	09/12/84	470	325	140	118	4720
7	09/13/84	695	535	146	122	4460
8	09/14/84	760	630	162	138	4480
9	09/15/84	325	235	124	100	4150
10	09/16/84	500	340	132	108	3760
11	09/17/84	555	350	140	108	3860
12	09/18/84	465	405	180	144	4500
13	09/19/84	655	--	410	--	5460
14	09/20/84	840	580	300	266	6100
15	09/21/84	650	--	286	--	6420
16	09/22/84	670	--	236	--	6600
17	09/23/84	1020	745	260	236	6980
18	09/24/84	1050	--	382	--	7070
19	09/25/84	590	--	620	--	7220
20	09/26/84	1320	--	480	--	7360
21	09/27/84	840	440	250	198	7600
22	09/28/84	447	--	143	--	7700
23	09/29/84	587	440	234	142	6480
24	09/30/84	650	--	132	--	6980
25	10/01/84	360	240	85	59	--
26	10/02/84	590	--	48	--	6890
27	10/03/84	1060	800	50	42	7160
28	10/04/84	440	--	55	--	7140

(continued)

TABLE C-19. (continued)

Day	Date	FEED		EFFLUENT		ML
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)
29	10/05/84	630	--	28	--	7080
30	10/06/84	630	--	53	--	7900
31	10/07/84	720	440	31	23	8160
32	10/08/84	560	--	72	--	7960
33	10/09/84	890	670	154	136	7740
34	10/10/84	500	400	330	260	--
35	10/11/84	1000	720	306	278	8010
36	10/12/84	770	540	64	54	7700
37	10/13/84	560	410	210	196	7780
38	10/14/84	625	435	188	154	7840
39	10/15/84	1180	720	138	118	8170
40	10/16/84	590	400	160	118	8300
41	10/17/84	790	440	80	54	7880
42	10/18/84	760	540	198	168	8120
43	10/19/84	620	530	203	183	7740
44	10/20/84	950	640	175	149	7580
45	10/21/84	740	540	200	162	7500
46	10/22/84	370	280	144	126	6700
47	10/23/84	467	240	260	188	6620
48	10/24/84	550	--	103	--	7090
49	10/25/84	750	590	224	192	9640
50	10/26/84	660	--	70	--	7360
51	10/27/84	510	--	53	--	8740
52	10/28/84	333	327	66	60	7200
53	10/29/84	580	--	37	--	--
54	10/30/84	460	353	90	78	8660
55	10/31/84	630	--	54	--	8820
56	11/01/84	760	380	43	17	8350

(continued)

TABLE C-19. (continued)

Day	Date	FEED TSS (mg/l)	FEED VSS (mg/l)	EFFLUENT TSS (mg/l)	EFFLUENT VSS (mg/l)	ML TSS (mg/l)
57	11/02/84	390	--	68	--	8060
58	11/03/84	610	520	43	33	8060
59	11/04/84	710	560	112	92	7800
60	11/05/84	330	170	73	73	7680
61	11/06/84	480	--	57	--	7040
62	11/07/84	390	--	39	--	6980
63	11/08/84	1300	--	30	--	7680
64	11/09/84	520	380	43	28	7950
65	11/10/84	450	--	22	--	7900
66	11/11/84	500	400	33	30	8000
67	11/12/84	470	--	34	--	8340
68	11/13/84	590	510	28	20	8160
69	11/14/84	920	--	26	--	8420
70	11/15/84	390	320	73	67	7970
71	11/16/84	300	--	164	--	8750
72	11/17/84	600	430	220	120	8800
73	11/18/84	353	--	122	--	8760
74	11/19/84	200	140	53	33	8670
75	11/20/84	350	--	46	--	8700
76	11/21/84	780	--	41	--	9280
77	11/22/84	680	--	25	--	8500
78	11/23/84	790	530	22	18	8460
79	11/24/84	350	--	26	--	7820
80	11/25/84	1140	530	53	46	7490
81	11/26/84	520	380	69	56	9870
82	11/27/84	580	350	--	--	--
83	11/28/84	520	370	110	80	8240

*Dashes indicate no data taken.

TABLE C-20. BTS-2 ANALYTICAL DATA-TBOD & TCOD

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
1	09/07/84	3400	7770	--*	--	--	--
2	09/08/84	--	6130	--	--	878	--
3	09/09/84	3500	7450	54	16.8	857	695
4	09/10/84	--	8720	--	--	900	718
5	09/11/84	2700	7990	30	7.6	980	750
6	09/12/84	--	7530	--	--	1060	844
7	09/13/84	2500	7240	25.2	9.3	1050	851
8	09/14/84	--	8190	--	--	990	797
9	09/15/84	--	8390	--	--	1000	721
10	09/16/84	--	8870	--	--	1070	777
11	09/17/84	2000	5770	25.2	6.65	1010	781
12	09/18/84	--	5350	--	--	996	734
13	09/19/84	3000	7700	27.6	5.4	879	507
14	09/20/84	--	7720	--	--	922	469
15	09/21/84	--	6710	--	--	797	390
16	09/22/84	--	7180	--	--	764	397
17	09/23/84	--	7180	--	--	756	356
18	09/24/84	--	7500	--	--	967	361
19	09/25/84	--	6750	--	--	1230	299
20	09/26/84	--	9840	--	--	1020	321
21	09/27/84	2900	7250	--	--	640	247
22	09/28/84	--	7140	--	--	541	302
23	09/29/84	--	7010	--	--	551	328
24	09/30/84	--	5640	--	--	523	305
25	10/01/84	--	4850	--	--	541	351
26	10/02/84	--	6580	--	--	422	328
27	10/03/84	2300	6660	5.2	4.1	351	286
28	10/04/84	--	7660	--	--	543	356

(continued)

TABLE C-20. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
29	10/05/84	--	8720	--	--	316	247
30	10/06/84	--	12000	--	--	419	337
31	10/07/84	4100	8910	7	4.9	632	520
32	10/08/84	--	6330	--	--	419	--
33	10/09/84	--	7550	--	--	562	344
34	10/10/84	3000	10600	18.4	<3	549	347
35	10/11/84	--	6200	--	--	750	330
36	10/12/84	1900	6830	7.6	<3	356	216
37	10/13/84	--	9540	--	--	570	261
38	10/14/84	--	10100	--	--	538	218
39	10/15/84	3900	12000	13.7	3.9	482	218
40	10/16/84	--	11400	--	--	500	273
41	10/17/84	2200	8440	21	15	538	321
42	10/18/84	--	6890	--	--	543	261
43	10/19/84	--	6890	--	--	580	236
44	10/20/84	2500	6740	21	5.2	530	232
45	10/21/84	--	7030	--	--	507	265
46	10/22/84	--	5520	--	--	474	293
47	10/23/84	--	5510	9.6	<2	528	236
48	10/24/84	--	8280	--	--	361	203
49	10/25/84	2500	6850	20.4	<2	538	247
50	10/26/84	--	4060	--	--	375	216
51	10/27/84	--	8890	--	--	--	--
52	10/28/84	--	7030	--	--	380	279
53	10/29/84	--	6070	--	--	302	138
54	10/30/84	2100	5640	9.6	<2	309	179
55	10/31/84	--	6170	--	--	214	179
56	11/01/84	--	2500	--	--	--	181

(continued)

TABLE C-20. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
57	11/02/84	--	2260	--	--	232	127
58	11/03/84	--	3980	--	--	223	106
59	11/04/84	--	4550	--	--	371	234
60	11/05/84	2800	3320	19.2	7.8	286	234
61	11/06/84	--	4680	--	--	451	216
62	11/07/84	--	6840	--	--	238	153
63	11/08/84	--	6780	--	--	241	207
64	11/09/84	3000	7140	--	--	318	229
65	11/10/84	--	8910	--	--	259	234
66	11/11/84	2900	7120	4.2	3.6	288	212
67	11/12/84	--	5800	--	--	--	201
68	11/13/84	--	9290	--	--	247	216
69	11/14/84	--	7730	--	--	326	225
70	11/15/84	--	5700	--	--	--	--
71	11/16/84	--	6450	--	--	436	241
72	11/17/84	--	7880	--	--	419	179
73	11/18/84	--	6870	--	--	330	209
74	11/19/84	1700	4560	12.2	3.1	225	153
75	11/20/84	--	7830	--	--	259	190
76	11/21/84	--	7260	--	--	--	--
77	11/22/84	--	6660	--	--	--	--
78	11/23/84	--	5280	--	--	170	151
79	11/24/84	--	4950	--	--	170	157
80	11/25/84	2300	5980	8.7	4.3	225	157
81	11/26/84	--	7550	--	--	256	190
82	11/27/84	3500	7990	--	--	--	--
83	11/28/84	--	--	14	7.7	347	205

*Dashes indicate no data taken.

TABLE C-21. BTS-3 OPERATIONAL DATA

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	F/M Ratios (gm TCOD/ day-gm MLSS)	(gm TBOD/ day-gm MLSS)
1	09/07/84	45	2.92	--*	--	--
2	09/08/84	45	2.92	11.0	.679	--
3	09/09/84	48	2.75	9.7	.873	.410
4	09/10/84	46	2.84	9.5	.967	--
5	09/11/84	46	2.86	9.1	.792	.268
6	09/12/84	45	2.92	8.9	.764	--
7	09/13/84	45	2.92	9.5	.729	.252
8	09/14/84	45	2.92	10.3	.762	--
9	09/15/84	56	2.33	6.9	.964	--
10	09/16/84	48	2.76	7.4	.884	--
11	09/17/84	44	2.95	7.2	.557	.193
12	09/18/84	45	2.94	5.2	.535	--
13	09/19/84	43	3.04	5.6	--	--
14	09/20/84	47	2.81	10.3	.657	--
15	09/21/84	46	2.88	7.6	--	--
16	09/22/84	48	2.74	7.8	--	--
17	09/23/84	45	2.92	9.8	.805	--
18	09/24/84	45	2.95	10.5	--	--
19	09/25/84	46	2.88	9.4	.820	--
20	09/26/84	42	3.13	9.2	--	--
21	09/27/84	47	2.82	9.7	.886	.354
22	09/28/84	47	2.78	8.8	.721	--
23	09/29/84	47	2.78	9.3	--	--
24	09/30/84	46	2.84	10.2	--	--
25	10/01/84	47	2.78	10.0	.573	--
26	10/02/84	46	2.88	9.9	--	--
27	10/03/84	42	3.14	7.9	.848	.293
28	10/04/84	44	2.98	9.6	--	--

(continued)

TABLE C-21. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	F/M Ratios (gm TCOD/ day-gm MLSS)	(gm TBOD/ day-gm MLSS)
29	10/05/84	48	2.73	9.1	--	--
30	10/06/84	48	2.75	10.6	--	--
31	10/07/84	44	2.96	9.9	.733	.337
32	10/08/84	43	3.02	10.7	--	--
33	10/09/84	44	2.99	10.5	.561	--
34	10/10/84	48	2.76	--	--	--
35	10/11/84	46	2.87	9.3	.491	--
36	10/12/84	43	3.06	8.0	.512	.143
37	10/13/84	44	2.97	8.7	.787	--
38	10/14/84	49	2.66	9.2	.912	--
39	10/15/84	43	3.07	9.6	.875	.284
40	10/16/84	43	3.04	9.6	.688	--
41	10/17/84	44	2.99	9.4	.673	.175
42	10/18/84	36	3.64	9.5	.599	--
43	10/19/84	43	3.07	10.2	.573	--
44	10/20/84	44	2.98	10.7	.593	.220
45	10/21/84	43	3.05	9.7	.616	--
46	10/22/84	43	3.02	9.6	.510	--
47	10/23/84	44	2.95	9.3	.559	--
48	10/24/84	44	3.01	9.3	--	--
49	10/25/84	46	2.85	9.4	.703	.257
50	10/26/84	40	3.26	10.0	--	--
51	10/27/84	41	3.21	8.9	--	--
52	10/28/84	44	2.97	10.1	.567	--
53	10/29/84	45	2.94	10.8	--	--
54	10/30/84	45	2.95	10.7	.480	.179
55	10/31/84	44	3.01	10.6	--	--
56	11/01/84	44	2.99	10.6	.227	--

(continued)

TABLE C-21. (continued)

Day	Date	Flow (l/min)	HRT (days)	SRT (days)	F/M Ratios (gm TCOD/ day-gm MLSS)	(gm TBOD/ day-gm MLSS)
57	11/02/84	44	2.96	9.9	--	--
58	11/03/84	42	3.15	9.9	.333	--
59	11/04/84	44	2.97	9.4	.484	--
60	11/05/84	45	2.95	9.4	.288	.242
61	11/06/84	44	2.99	9.5	--	--
62	11/07/84	51	2.57	10.3	--	--
63	11/08/84	37	3.53	9.8	--	--
64	11/09/84	53	2.46	19.8	.692	.291
65	11/10/84	39	3.34	9.3	--	--
66	11/11/84	51	2.58	9.4	.637	.259
67	11/12/84	40	3.26	9.8	--	--
68	11/13/84	49	2.69	9.6	.804	--
69	11/14/84	48	2.73	9.4	--	--
70	11/15/84	40	3.28	10.0	.458	--
71	11/16/84	41	3.21	9.9	--	--
72	11/17/84	44	2.97	9.3	.653	--
73	11/18/84	45	2.94	10.0	--	--
74	11/19/84	45	2.95	9.7	.919	.343
75	11/20/84	44	2.98	10.4	--	--
76	11/21/84	43	3.09	9.7	--	--
77	11/22/84	47	2.79	9.3	--	--
78	11/23/84	41	3.22	9.6	.411	--
79	11/24/84	45	2.94	8.9	--	--
80	11/25/84	44	2.98	9.5	.553	.213
81	11/26/84	43	3.09	7.7	.633	--
82	11/27/84	42	3.12	9.2	.715	.313
83	11/28/84	38	3.44	10.1	.340	.314

*Dashes indicate no data taken.

TABLE C-22. BTS-3 ANALYTICAL DATA-SOLIDS

Day	Date	FEED		EFFLUENT		ML	
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)
1	09/07/84	1300	628	--*	--	--	--
2	09/08/84	640	530	51	--	3350	3090
3	09/09/84	559	420	88	80	3620	3100
4	09/10/84	820	630	150	138	3620	3180
5	09/11/84	612	440	114	102	3950	3520
6	09/12/84	470	325	167	138	4100	3380
7	09/13/84	695	535	126	116	4020	3400
8	09/14/84	760	630	99	96	4060	3680
9	09/15/84	325	235	560	410	4160	3740
10	09/16/84	500	340	580	440	4240	3640
11	09/17/84	555	350	570	430	4070	3510
12	09/18/84	465	405	1420	1250	3900	3400
13	09/19/84	655	--	1460	--	4400	--
14	09/20/84	840	580	91	76	4820	4180
15	09/21/84	650	--	56	--	3960	--
16	09/22/84	670	--	56	--	3640	--
17	09/23/84	1020	745	87	80	3340	3060
18	09/24/84	1050	--	84	--	3160	--
19	09/25/84	590	--	98	--	3210	2860
20	09/26/84	1320	--	108	--	3300	--
21	09/27/84	840	440	145	130	3420	2900
22	09/28/84	447	--	123	--	3540	--
23	09/29/84	587	440	130	102	3980	3500
24	09/30/84	650	--	83	--	4020	--
25	10/01/84	360	240	38	35	3460	3040
26	10/02/84	590	--	100	--	3000	--
27	10/03/84	1060	800	430	330	2980	2500
28	10/04/84	440	--	108	--	2780	--

(continued)

TABLE C-22. (continued)

Day	Date	FEED		EFFLUENT		ML	
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)
29	10/05/84	630	--	80	--	2980	--
30	10/06/84	630	--	--	--	5160	--
31	10/07/84	720	440	89	59	4800	4100
32	10/08/84	560	--	69	--	5060	--
33	10/09/84	890	670	72	67	5160	4500
34	10/10/84	500	400	120	97	--	--
35	10/11/84	1000	720	148	128	5020	4400
36	10/12/84	770	540	232	192	5040	4360
37	10/13/84	560	410	273	227	4680	4080
38	10/14/84	625	435	180	140	5280	4160
39	10/15/84	1180	720	89	63	5460	4460
40	10/16/84	590	400	90	55	6340	5460
41	10/17/84	790	440	133	74	5140	4190
42	10/18/84	760	540	132	115	4040	3160
43	10/19/84	620	530	146	117	4550	3920
44	10/20/84	950	640	112	88	4320	3820
45	10/21/84	740	540	104	74	4200	3740
46	10/22/84	370	280	100	80	4040	3580
47	10/23/84	467	240	148	75	4220	3340
48	10/24/84	550	--	118	--	4080	--
49	10/25/84	750	590	98	78	3950	3420
50	10/26/84	660	--	42	--	4020	--
51	10/27/84	510	--	57	--	4440	--
52	10/28/84	333	327	52	51	4660	4180
53	10/29/84	580	--	128	--	4640	--
54	10/30/84	460	353	70	48	4620	3980
55	10/31/84	630	--	85	--	4580	--
56	11/01/84	760	380	92	44	4340	3690

(continued)

TABLE C-22. (continued)

Day	Date	FEED		EFFLUENT		ML	
		TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)	TSS (mg/l)	VSS (mg/l)
57	11/02/84	390	--	100	--	4200	--
58	11/03/84	610	520	77	53	4440	3800
59	11/04/84	710	560	64	46	4810	--
60	11/05/84	330	170	75	40	4570	3910
61	11/06/84	480	--	65	--	3040	--
62	11/07/84	390	--	50	--	4520	--
63	11/08/84	1300	--	55	--	4880	--
64	11/09/84	520	380	50	46	4840	4190
65	11/10/84	450	--	23	--	4840	--
66	11/11/84	500	400	68	50	4900	4330
67	11/12/84	470	--	104	--	5000	--
68	11/13/84	590	510	100	78	5280	4300
69	11/14/84	920	--	120	--	5340	--
70	11/15/84	390	320	137	104	4540	3800
71	11/16/84	300	--	128	--	4840	--
72	11/17/84	600	430	145	95	4860	4060
73	11/18/84	353	--	100	--	4960	--
74	11/19/84	200	140	70	56	4630	--
75	11/20/84	350	--	70	--	4480	--
76	11/21/84	580	--	63	--	4900	--
77	11/22/84	680	--	190	--	4980	--
78	11/23/84	790	530	75	58	4570	3990
79	11/24/84	350	--	93	--	4140	--
80	11/25/84	1140	530	164	142	4120	3630
81	11/26/84	520	380	590	485	4420	3860
82	11/27/84	580	350	253	198	4240	3580
83	11/28/84	520	370	128	93	4700	4080
84	11/29/84	--	--	--	--	--	--

*Dashes indicate no data taken.

TABLE C-23. BTS-3 ANALYTICAL DATA-TBOD & TCOD

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
1	09/07/84	3400	7770	--*	--	--	--
2	09/08/84	--	6130	--	--	761	--
3	09/09/84	3500	7450	80	23.4	833	687
4	09/10/84	--	8720	--	--	1290	961
5	09/11/84	2700	7990	84	36	983	773
6	09/12/84	--	7530	--	--	1210	913
7	09/13/84	2500	7240	44.4	9.2	1100	913
8	09/14/84	--	8190	--	--	1020	882
9	09/15/84	--	8390	--	--	1540	776
10	09/16/84	--	8870	--	--	1640	877
11	09/17/84	2000	5770	125	28	1660	891
12	09/18/84	--	5350	--	--	2590	842
13	09/19/84	3000	7700	252	14.5	2450	860
14	09/20/84	--	7720	--	--	1060	957
15	09/21/84	--	6710	--	--	929	863
16	09/22/84	--	7180	--	--	1070	961
17	09/23/84	--	7180	--	--	1140	941
18	09/24/84	--	7500	--	--	1200	998
19	09/25/84	--	6750	--	--	1260	976
20	09/26/84	--	9840	--	--	1270	1010
21	09/27/84	2900	7250	--	--	1300	1020
22	09/28/84	--	7140	--	--	1270	1060
23	09/29/84	--	7010	--	--	1300	1110
24	09/30/84	--	5640	--	--	1140	957
25	10/01/84	--	4850	--	--	1050	1030
26	10/02/84	--	6580	--	--	1100	1010
27	10/03/84	2300	6660	67.2	16.5	1360	1060
28	10/04/84	--	7660	--	--	1000	888

(continued)

TABLE C-23. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
29	10/05/84	--	8720	--	--	--	--
30	10/06/84	--	12000	--	--	--	875
31	10/07/84	4100	8910	41.8	27.3	1260	926
32	10/08/84	--	6330	--	--	1070	--
33	10/09/84	--	7550	--	--	1060	824
34	10/10/84	3000	10600	26.7	5.5	983	929
35	10/11/84	--	6200	--	--	1130	866
36	10/12/84	1900	6830	37.5	8	1190	812
37	10/13/84	--	9540	--	--	1160	803
38	10/14/84	--	10100	--	--	1060	732
39	10/15/84	3900	12000	25.5	8.5	1090	919
40	10/16/84	--	11400	--	--	1030	910
41	10/17/84	2200	8440	32.6	16	1160	872
42	10/18/84	--	6890	--	--	1180	863
43	10/19/84	--	6890	--	--	1060	773
44	10/20/84	2500	6740	19.5	4.7	1020	797
45	10/21/84	--	7030	--	--	1120	851
46	10/22/84	--	5520	--	--	932	744
47	10/23/84	--	5510	15.7	6	894	684
48	10/24/84	--	8280	--	--	843	681
49	10/25/84	2500	6850	16	9	863	738
50	10/26/84	--	4060	--	--	812	718
51	10/27/84	--	8890	--	--	751	694
52	10/28/84	--	7030	--	--	869	759
53	10/29/84	--	6070	--	--	833	604
54	10/30/84	2100	5640	12.5	9	869	687
55	10/31/84	--	6170	--	--	803	747
56	11/01/84	--	2500	--	--	803	715

(continued)

TABLE C-23. (continued)

Day	Date	FEED		EFFLUENT			
		TBOD (mg/l)	TCOD (mg/l)	NIBOD (mg/l)	NISBOD (mg/l)	TCOD (mg/l)	SCOD (mg/l)
57	11/02/84	--	2260	--	--	800	613
58	11/03/84	--	3980	--	--	769	599
59	11/04/84	--	4550	--	--	800	712
60	11/05/84	2800	3320	21.1	6.8	806	753
61	11/06/84	--	4680	--	--	980	721
62	11/07/84	--	6840	--	--	894	645
63	11/08/84	--	6780	--	--	712	659
64	11/09/84	3000	7140	--	--	721	684
65	11/10/84	--	8910	--	--	753	690
66	11/11/84	2900	7120	9.6	5.9	803	684
67	11/12/84	--	5800	--	--	744	656
68	11/13/84	--	9290	--	--	860	681
69	11/14/84	--	7730	--	--	1010	727
70	11/15/84	--	5700	--	--	769	659
71	11/16/84	--	6450	--	--	776	693
72	11/17/84	--	7880	--	--	794	618
73	11/18/84	--	6870	--	--	693	626
74	11/19/84	1700	4560	15.2	3.5	634	492
75	11/20/84	--	7830	--	--	659	530
76	11/21/84	--	7260	--	--	578	538
77	11/22/84	--	6660	--	--	727	604
78	11/23/84	--	5280	--	--	632	541
79	11/24/84	--	4950	--	--	648	507
80	11/25/84	2300	5980	26.7	8.9	710	549
81	11/26/84	--	7550	--	--	1300	738
82	11/27/84	3500	7990	26	15.1	785	515
83	11/28/84	--	--	17	12	712	632

*Dashes indicate no data taken.

TABLE C-24. RESULTS OF ANALYSIS OF SPECIAL NITROGEN BALANCE SAMPLES
OCTOBER 27, 1984

Sample	Total Kjeldahl Nitrogen (mg/l)	Ammonia Nitrogen (mg/l)	Nitrate Nitrogen (mg/l)	Nitrite Nitrogen (mg/l)
Feed Sample (B)	316	*	1	1
Merck Effluent (J)	216	109	1	1
BTS-1 Effluent (F1)	28	1	87	1
BTS-2 Effluent (F2)	53	16	85	1
BTS-3 Effluent (F3)	48	27	178	1

*Not measured.

NOTE: Analysis performed by Rexnord EETC laboratory.

TABLE C-25. PILOT PLANT NITROGEN DATA

Day	Date	Sample Site	Total Kjeldahl Nitrogen (mg/l N)	Ammonia Nitrogen (mg/l N)	Nitrate + Nitrite Nitrogen (mg/l N)
71	11/16/84	Feed (B)	250	12	3.18
71	11/16/84	BTS-1 Eff (F1)	39	3.4	72.8
71	11/16/84	BTS-2 Eff (F2)	11	2.3	111
71	11/16/84	BTS-3 Eff (F3)	28	7.4	189
75	11/20/84	Feed (B)	65	5.2	1.78
75	11/20/84	BTS-1 Eff (F1)	33	3.9	28.6
75	11/20/84	BTS-2 Eff (F2)	7.3	1.3	70
75	11/20/84	BTS-3 Eff (F3)	25	1.1	174
81	11/26/84	Feed (B)	380	0.23	3.40
81	11/26/84	BTS-1 Eff (F1)	--*	7.8	37.6
81	11/26/84	BTS-2 Eff (F2)	--	2.3	102
81	11/26/84	BTS-3 Eff (F3)	--	3.8	163
83	11/28/84	Feed (B)	410	80	3.55
83	11/28/84	BTS-1 Eff (F1)	--	--	--
83	11/28/84	BTS-2 Eff (F2)	--	--	--
83	11/28/84	BTS-3 Eff (F3)	76	9.9	145
84	11/29/84	Feed (B)	180	51	2.83
84	11/29/84	BTS-1 Eff (F1)	31	8.3	47.6
84	11/29/84	BTS-2 Eff (F2)	20	1.4	92
84	11/29/84	BTS-3 Eff (F3)	46	4.3	137

*Dashes indicate no data taken.

TABLE C-26. MIXED LIQUOR SETTLING TEST (9/17/84)

Time, min	BTS-3	
	POI*, (ml)	POI, (ft)
0	1000	1.1
15	1000	1.1
60	990	1.09
120	985	1.08
180	975	1.07
230	959	1.05

*Point of interface

TABLE C-27. MIXED LIQUOR SETTLING TEST (9/22/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
30	983	1.08	970	1.07	995	1.09
60	-*	-	-	-	990	1.09
65	-	-	900	0.99	-	-
70	960	1.06	-	-	-	-
90	-	-	-	-	990	1.09
95	-	-	873	0.96	-	-
100	945	1.04	-	-	-	-
160	910	1.00	-	-	-	-
155	-	-	783	0.86	-	-
150	-	-	-	-	980	1.08
280	850	0.94	-	-	-	-
275	-	-	640	0.70	-	-
270	-	-	-	-	960	1.06
1150	440	0.48	-	-	-	-
1145	-		400**	0.44	-	-
1150	-	-	-	-	630	0.69
1420	400	0.44	-	-	-	-
1415	-		360***	0.40	-	-
1410	-	-	-	-	580	0.64

* Dashes indicate no data taken.
** Sample had ~ 30 ml of material floating.
*** Sample appeared gassy.

TABLE C-28. MIXED LIQUOR SETTLING TEST (9/27/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
30	995	1.09	980	1.08	990	1.09
60	990	1.09	970	1.07	980	1.08
120	980	1.08	940	1.03	970	1.07
150	980	1.08	928	1.02	960	1.06
930	800	0.88	590	0.65	490	0.54

TABLE C-29. MIXED LIQUOR SETTLING TEST (9/28/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
30	980	1.08	980	1.08	990	1.09
60	980	1.08	970	1.07	970	1.07
90	980	1.08	965	1.06	940	1.03
160	970	1.07	925	1.02	720	0.80
1020	565	0.62	400	0.48	*	*

* Solids floated

TABLE C-30. MIXED LIQUOR SETTLING TEST (9/29/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	-*	-	1000	1.1
10	990	1.09	-	-	995	1.09
30	980	1.08	-	-	985	1.08
45	980	1.08	-	-	980	1.08
165	970	1.07	-	-	780	0.86
240	955	1.05	-	-	650	0.72
1090	485	0.53	-	-	250	0.28

*Dashes indicate no data taken.

TABLE C-31. MIXED LIQUOR SETTLING TEST (10/1/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	995	1.09	990	1.09	995	1.09
20	980	1.08	980	1.08	990	1.09
40	975	1.07	975	1.07	985	1.08
850	510	0.56	430	0.47	590	0.65

TABLE C-32. MIXED LIQUOR SETTLING TEST (10/2/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
15	990	1.09	995	1.09	995	1.09
30	985	1.08	990	1.09	990	1.09
50	980	1.08	980	1.08	980	1.08
95	965	1.06	965	1.06	960	1.06
175	955	1.05	950	1.05	940	1.03
260	930	1.02	920	1.01	900	0.99
1050	440	0.48	350	0.40	530	0.58

TABLE C-33. MIXED LIQUOR SETTLING TEST (10/5/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	-*	-	1000	1.1
30	980	1.08	-	-	990	1.09
75	970	1.07	-	-	985	1.08
185	855	0.94	-	-	960	1.06
265	700	0.77	-	-	945	1.04
1385	340	0.38	-	-	370	0.41

*Dashes indicate no data taken.

TABLE C-34. MIXED LIQUOR SETTLING TEST (10/8/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
3	990	1.09	990	1.09	1000	1.1
6	985	1.08	990	1.09	1000	1.1
9	980	1.08	990	1.09	1000	1.1
12	980	1.08	990	1.09	1000	1.1
15	978	1.08	990	1.09	1000	1.1
18	975	1.07	-*	-	1000	1.1
20	970	1.07	985	1.08	1000	1.1
25	965	1.06	985	1.08	1000	1.1
30	955	1.05	985	1.08	1000	1.1
40	945	1.04	980	1.08	1000	1.1
45	935	1.03	975	1.07	1000	1.1
55	890	0.98	975	1.07	1000	1.1
65	830	0.91	970	1.07	1000	1.1
75	785	0.86	970	1.07	1000	1.1
90	715	0.80	960	1.06	995	1.09
115	650	0.72	945**	1.04	995	1.09
125	590	0.65	790	0.87	990	1.09
150	550	0.61	730	0.80	990	1.09
180	500	0.55	660	0.73	990	1.09

*Dashes indicate no data taken

**Sample appeared gassy

TABLE C-35. MIXED LIQUOR SETTLING TEST (10/9/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	995	1.09	1000	1.1	1000	1.1
10	990	1.09	1000	1.1	1000	1.1
15	985	1.08	1000	1.1	1000	1.1
20	982	1.08	995	1.09	1000	1.1
25	980	1.08	992	1.09	1000	1.1
30	975	1.07	990	1.09	1000	1.1
35	970	1.07	988	1.09	1000	1.1
40	965	1.06	985	1.08	1000	1.1
50	950	1.05	975	1.07	1000	1.1
70	910	1.00	775	0.85	990**	1.09
80	860	0.95	760*	0.84	990	1.09
90	780	0.86	680	0.75	950	1.05
100	760	0.84	660	0.73	925	1.02
110	735	0.81	660	0.73	900	0.99
120	720	0.79	650	0.72	890	0.98
150	620	0.68	630	0.69	860	0.95
180	550	0.61	610	0.67	830	0.91
210	520	0.58	580*	0.64	810	0.89
240	470	0.52	570	0.63	790	0.87
278	450	0.50	-***	-	780	0.86

*Solids floated
**Floc formation
***Dashes indicate no data taken

TABLE C-36. MIXED LIQUOR SETTLING TEST (10/10/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	995	1.09	995	1.09	1000	1.1
10	985	1.08	985	1.08	1000	1.1
15	982	1.08	982	1.08	1000	1.1
20	978	1.08	978	1.08	1000	1.1
25	975	1.07	975	1.07	995	1.09
30	965	1.06	970	1.07	995	1.09
35	960	1.06	965	1.06	990	1.09
40	940	1.03	960	1.06	985	1.08
50	840	0.92	950	1.05	970	1.07
60	810	0.89	850	0.94	950	1.05
70	780	0.85	790	0.87	930	1.02
80	770	0.85	780	0.86	930	1.02
90	740	0.81	760	0.84	930	1.02
100	720	0.79	750	0.83	930	1.02
120	690	0.76	735	0.81	930	1.02
150	640	0.70	725	0.80	930	1.02
180	580	0.64	*	*	930	1.02

*Solids floated

TABLE C-37. MIXED LIQUOR SETTLING TEST (10/11/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	990	1.09	990	1.09	1000	1.1
10	985	1.08	980	1.08	1000	1.1
15	970	1.07	965	1.06	1000	1.1
30	965	1.06	955	1.05	995	1.1
45	950	1.05	940	1.03	990	1.09
60	930	1.02	830	0.91	990	1.09
75	910	1.00	770	0.85	990	1.09
90	880	0.97	720	0.79	990	1.09
100	850	0.94	680	0.75	990	1.09
120	800	0.88	650	0.72	990	1.09
175	660	0.66	620	0.68	990	1.09
210	580	0.64	620	0.68	990	1.09
235	525	0.58	*	*	985	1.08
300	470	0.52	-**	-	985	1.08

*Solids floated

**Dashes indicate no data taken.

TABLE C-38. MIXED LIQUOR SETTLING TEST (10/12/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	995	1.09	1000	1.1	1000	1.1
10	990	1.09	1000	1.1	1000	1.1
15	985	1.08	995	1.09	1000	1.1
20	980	1.08	990	1.09	1000	1.1
25	980	1.08	990	1.09	1000	1.1
30	980	1.08	990	1.09	1000	1.1
35	975	1.07	985	1.08	1000	1.1
40	975	1.07	985	1.08	1000	1.1
50	970	1.07	975	1.07	1000	1.1
60	965	1.06	970	1.07	1000	1.1
70	960	1.06	965	1.06	1000	1.1
85	920	1.01	950	1.05	1000	1.1
90	900	0.99	930	1.02	1000	1.1
110	820	0.90	870	0.96	1000	1.1
120	775	0.85	850	0.94	1000	1.1
150	675	0.74	820	0.90	1000	1.1
180	610	0.67	780	0.86	1000	1.1

TABLE C-39. MIXED LIQUOR SETTLING TEST (10/13/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	995	1.09	1000	1.1	1000	1.1
10	990	1.09	995	1.09	1000	1.1
15	985	1.08	992	1.09	1000	1.1
20	980	1.08	985	1.08	1000	1.1
25	980	1.08	985	1.08	1000	1.1
30	978	1.08	982	1.08	1000	1.1
40	970	1.07	975	1.07	1000	1.1
50	965	1.06	970	1.07	995	1.09
60	960	1.06	970	1.07	995	1.09
75	945	1.04	960	1.06	995	1.09
90	910	1.00	950	1.05	995	1.09
120	880	0.97	940	1.04	995	1.09
150	830	0.91	820	0.90	995	1.09
180	780	0.86	700	0.77	990	1.09
240	700	0.77	630	0.69	990	1.09

TABLE C-40. MIXED LIQUOR SETTLING TEST (10/14/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
10	995	1.09	990	1.09	1000	1.1
15	992	1.09	985	1.08	1000	1.1
25	990	1.09	980	1.08	995	1.09
30	985	1.08	975	1.07	995	1.09
40	980	1.08	970	1.07	995	1.09
50	980	1.08	965	1.06	995	1.09
60	972	1.07	960	1.06	995	1.09
70	970	1.07	955	1.05	995	1.09
80	965	1.06	945	1.04	995	1.09
90	960	1.06	940	1.03	995	1.09
105	950	1.05	920	1.01	992	1.09
120	920	1.01	885	0.97	992	1.09
135	900	0.99	860	0.96	990	1.09
150	895	0.99	840	0.93	990	1.09
180	870	0.96	790	0.87	990	1.09

TABLE C-41. MIXED LIQUOR SETTLING TEST (10/15/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	990	1.09	1000	1.1	1000	1.1
10	990	1.09	1000	1.1	1000	1.1
15	985	1.08	1000	1.1	1000	1.1
20	985	1.08	998	1.09	1000	1.1
25	985	1.08	995	1.09	1000	1.1
30	985	1.08	995	1.09	1000	1.1
40	980	1.08	992	1.09	1000	1.1
50	980	1.08	985	1.08	1000	1.1
60	980	1.08	985	1.08	1000	1.1
90	960	1.06	970	1.07	1000	1.1
130	930	1.02	960	1.06	995	1.09
150	900	0.99	960	1.06	990	1.09
190	780	0.86	*	*	990	1.09

*Solids floated

TABLE C-42. MIXED LIQUOR SETTLING TEST (10/16/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	995	1.09	995	1.09	1000	1.1
15	995	1.09	990	1.09	1000	1.1
20	990	1.09	988	1.09	1000	1.1
25	985	1.08	985	1.08	1000	1.1
30	985	1.08	982	1.08	1000	1.1
40	985	1.08	980	1.08	1000	1.1
50	980	1.08	970	1.07	1000	1.1
60	980	1.08	965	1.06	1000	1.1
80	980	1.08	950	1.05	1000	1.1
90	980	1.08	940	1.03	1000	1.1
105	975	1.07	930	1.02	1000	1.1
120	970*	1.07	930	1.02	1000	1.1
150	-**	-	890	0.98	995	1.09
180	-	-	880	0.97	995	1.09

*Solids floated
**Dashes indicate no data taken.

TABLE C-43. MIXED LIQUOR SETTLING TEST (10/17/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
10	995	1.09	990	1.09	1000	1.1
15	990	1.09	990	1.09	1000	1.1
20	990	1.09	985	1.08	1000	1.1
25	990	1.09	982	1.08	1000	1.1
30	990	1.09	978	1.08	1000	1.1
40	990	1.09	975	1.07	1000	1.1
50	985	1.08	968	1.06	1000	1.1
60	985	1.08	960	1.06	1000	1.1
75	980	1.08	952	1.05	1000	1.1
90	980	1.08	945	1.04	1000	1.1
120	972	1.07	922	1.01	1000	1.1
150	970	1.07	875	0.96	1000	1.1
180	930*	*	770	0.85	995	1.09

*Solids floated

TABLE C-44. MIXED LIQUOR SETTLING TEST (10/19/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
10	1000	1.1	995	1.09	1000	1.1
15	1000	1.1	990	1.09	1000	1.1
20	1000	1.1	988	1.09	1000	1.1
25	1000	1.1	985	1.08	1000	1.1
30	1000	1.1	982	1.08	995	1.09
40	1000	1.1	975	1.07	995	1.09
75	990	1.09	940	1.03	990	1.09
90	980	1.08	910	1.00	985	1.08
120	970	1.07	750	0.83	980	1.08
150	*	*	680	0.75	970	1.07
180	-**	-	660	0.73	965	1.06

*Solids floated

**Dashes indicate no data taken.

TABLE C-45. MIXED LIQUOR SETTLING TEST (10/20/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
20	990	1.09	980	1.08	990	1.09
28	990	1.09	970	1.07	990	1.09
36	990	1.09	968	1.06	990	1.09
48	990	1.09	960	1.06	990	1.09
60	985	1.08	950	1.05	990	1.09
82	980	1.08	930	1.02	980	1.08
104	980	1.08	910	1.00	980	1.08
147	975	1.07	870	0.96	965	1.06
187	*	*	830	0.91	945	1.04
240	-**	-	770	0.85	925	1.02

* Solids floated

**Dashes indicate no data taken.

TABLE C-46. MIXED LIQUOR SETTLING TEST (10/21/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	995	1.09	995	1.09
13	990	1.09	980	1.08	990	1.09
21	990	1.09	970	1.07	990	1.09
28	985	1.08	965	1.06	985	1.08
36	980	1.08	960	1.06	985	1.08
42	980	1.08	950	1.05	985	1.08
60	980	1.08	940	1.03	980	1.08
73	970	1.07	925	1.02	975	1.07
91	950	1.05	910	1.00	970	1.07
120	950	1.05	885	0.97	955	1.05
138	940	1.03	870	0.96	950	1.05
151	930	1.02	855	0.95	940	1.03
180	920	1.01	835	0.92	930	1.02

TABLE C-47. MIXED LIQUOR SETTLING TEST (10/22/84)

Time, min	BTS-1 POI, (ml)	BTS-1 POI, (ft)	BTS-2 POI, (ml)	BTS-2 POI, (ft)	BTS-3 POI, (ml)	BTS-3 POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
6	1000	1.1	1000	1.1	1000	1.1
14	1000	1.1	990	1.09	1000	1.1
20	995	1.09	980	1.08	995	1.09
27	990	1.09	970	1.07	990	1.09
35	990	1.09	965	1.06	990	1.09
44	990	1.09	950	1.04	980	1.09
70	980	1.08	930	1.02	980	1.08
95	*	*	905	1.00	970	1.07
106	-**	-	900	1.00	970	1.07
120	-	-	880	0.97	960	1.06
217	-	-	805	0.89	870	0.96

*Solids floated
**Dashes indicate no data taken

TABLE C-48. MIXED LIQUOR SETTLING TEST (10/23/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
10	995	1.09	990	1.09	995	1.09
18	990	1.09	970	1.07	990	1.09
20	985	1.08	970	1.07	990	1.09
25	982	1.08	960	1.06	990	1.09
30	980	1.08	955	1.05	990	1.09
45	975	1.07	935	1.03	980	1.08
60	965	1.06	915	1.01	975	1.07
75	960	1.06	895	0.99	970	1.07
90	950	1.04	880	0.97	960	1.06
120	940	1.03	840	0.92	955	1.05
150	905	1.00	800	0.88	940	1.03
180	855	0.94	760	0.84	890	0.98

TABLE C-49. MIXED LIQUOR SETTLING TEST (10/24/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)	POI, (ml)	POI, (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	985	1.08	980	1.08	990	1.09
15	980	1.08	970	1.07	990	1.09
20	975	1.07	960	1.06	980	1.08
25	975	1.07	955	1.05	980	1.08
30	970	1.07	942	1.03	980	1.08
40	965	1.06	930	1.02	975	1.07
50	955	1.05	905	1.00	975	1.07
70	950	1.04	875	0.96	975	1.07
80	940	1.03	855	0.94	965	1.06
90	935	1.02	840	0.92	960	1.06
120	915	1.00	790	0.87	950	1.04
145	880	0.97	750	0.83	940	1.03
175	-*	-	695	0.77	-	-
200	-	-	665	0.73	-	-

*Dashes indicate no data taken.

TABLE C-50. BTS-1 MIXED LIQUOR SETTLING TEST WITH CHEMICAL TREATMENT (10/24/84)

	P763 dosage, mg/l			
	10		20	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.10	1000	1.10
1	985	1.08	930	1.02
2	980	1.08	905	1.00
3	972	1.07	885	0.97
4	970	1.07	875	0.96
5	965	1.06	855	0.94
6	960	1.06	835	0.92
7	955	1.05	815	0.90
8	950	1.04	805	0.88
9	945	1.04	790	0.87
10	945	1.04	775	0.85
12	935	1.03	745	0.82
15	925	1.02	710	0.78
20	905	1.00	660	0.73
25	885	0.97	625	0.69
30	865	0.95	590	0.65
35	825	0.91	555	0.61
45	785	0.86	520	0.57
55	720	0.72	485	0.53
60	690	0.76	470	0.52
73	640	0.70	455	0.50
85	610	0.67	440	0.48
90	590	0.65	440	0.48
105	565	0.62	440	0.48
121	555	0.61	435	0.48
132	550	0.60	435	0.48
157	545	0.60	435	0.48

TABLE C-51. BTS-2 MIXED LIQUOR SETTLING TEST WITH CHEMICAL TREATMENT (10/24/84)

	P763 dosage, mg/l			
	10		20	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.10	1000	1.10
1	975	1.07	945	1.04
2	960	1.06	905	1.00
3	950	1.04	875	0.96
4	930	1.02	840	0.92
5	920	1.01	810	0.89
6	905	1.00	775	0.85
7	885	0.97	750	0.82
8	875	0.96	725	0.80
9	860	0.95	705	0.78
10	845	0.93	675	0.74
11	825	0.91	655	0.72
12	810	0.89	640	0.70
15	755	0.83	580	0.64
20	675	0.74	525	0.58
25	615	0.68	485	0.53
30	565	0.62	455	0.50
40	500	0.55	420	0.46
50	455	0.50	400	0.44
60	430	0.47	385	0.42
76	400	0.44	375	0.41

TABLE C-52. MIXED LIQUOR SETTLING TEST (10/25/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
9	995	1.09	970	1.07	1000	1.1
16	990	1.09	955	1.05	985	1.09
20	985	1.08	950	1.04	980	1.08
25	980	1.08	930	1.02	980	1.08
35	975	1.07	920	1.02	980	1.08
42	970	1.07	890	0.98	975	1.07
52	960	1.06	870	0.96	975	1.07
106	925	1.02	760	0.84	950	1.04
120	910	1.00	730	0.80	950	1.04
140	900	0.99	690	0.76	945	1.04
150	890	0.98	670	0.74	940	1.03
165	880	0.97	640	0.70	920	1.01

TABLE C-53. MIXED LIQUOR SETTLING TEST (10/26/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	990	1.09	1000	1.1
10	992	1.09	975	1.07	1000	1.1
15	990	1.09	962	1.06	1000	1.1
20	985	1.08	952	1.05	1000	1.1
30	975	1.07	931	1.02	998	1.09
40	970	1.07	912	1.00	995	1.09
50	962	1.06	890	0.98	992	1.09
60	955	1.05	870	0.96	990	1.09
75	945	1.04	835	0.92	990	1.09
90	935	1.03	810	0.89	985	1.08
105	925	1.02	780	0.86	980	1.08
121	892	0.98	710	0.78	970	1.07
189	840	0.92	620	0.68	950	1.04

TABLE C-54. BTS-3 MIXED LIQUOR SETTLING TEST WITH CHEMICAL TREATMENT (10/26/84)

Time, min	P763 dosage, mg/l			
	10		20	
	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.10	1000	1.10
1	995	1.09	990	1.09
2	990	1.09	980	1.08
3	990	1.09	975	1.07
4	985	1.08	970	1.07
5	985	1.08	962	1.06
6	980	1.08	955	1.05
7	980	1.08	948	1.04
8	980	1.08	942	1.04
9	980	1.08	940	1.03
10	975	1.07	930	1.02
12	970	1.07	918	1.01
15	965	1.06	898	0.99
20	952	1.05	865	0.95
30	930	1.02	795	0.87
35	920	1.01	760	0.84
40	905	1.00	730	0.80
50	880	0.97	675	0.74
60	840	0.92	620	0.68
70	800	0.88	590	0.65
102	670	0.74	520	0.57
172	530	0.58	450	0.50

TABLE C-55. MIXED LIQUOR SETTLING TEST (10/27/84)

Time, min	BTS-1		BTS-2		BTS-3	
	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	998	1.09	990	1.09	1000	1.1
10	995	1.09	980	1.08	995	1.09
15	990	1.09	975	1.07	990	1.09
20	990	1.09	970	1.07	990	1.09
25	985	1.08	960	1.06	990	1.09
30	982	1.08	955	1.05	990	1.09
40	975	1.07	940	1.03	990	q.09
60	965	1.06	915	1.00	980	1.08
90	950	1.04	870	0.96	975	1.07
112	935*	1.03	825	0.91	975	1.07

* Solids floated

TABLE C-56. MIXED LIQUOR SETTLING TEST (11/1/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	990	1.09	975	1.07	995	1.09
20	985	1.08	960	1.06	990	1.09
30	970	1.07	925	1.02	990	1.09
45	960	1.06	890	0.98	990	1.09
60	950	1.04	870	0.96	985	1.08
85	930	1.02	820	0.90	980	1.08
100	910	1.00	790	0.87	978	1.08
110	890	0.98	765	0.84	975	1.07
120	860	0.95	750	0.83	970	1.07

TABLE C-57. MIXED LIQUOR SETTLING TEST (11/5/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	990	1.09	965	1.06	990	1.09
20	985	1.08	910	1.00	980	1.08
30	980	1.08	895	0.99	975	1.07
40	970	1.07	850	0.94	970	1.07
60	960	1.06	775	0.85	950	1.04
70	950	1.04	735	0.81	940	1.03
120	940	1.03	590	0.65	920	1.01

TABLE C-58. MIXED LIQUOR SETTLING TEST (11/7/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
5	1000	1.1	1000	1.1	1000	1.1
10	995	1.09	990	1.09	990	1.09
20	990	1.09	975	1.07	980	1.08
30	985	1.08	960	1.06	970	1.07
40	980	1.08	945	1.04	960	1.06
50	975	1.07	930	1.02	950	1.04
60	970	1.07	918	1.00	935	1.03
70	960	1.06	900	0.99	920	1.01
80	955	1.05	890	0.98	910	1.00
90	950	1.04	870	0.96	900	0.99
100	945	1.04	860	0.95	890	0.98
110	940	1.03	840	0.92	870	0.97
120	940	1.03	830	0.91	860	0.95

TABLE C-59. MIXED LIQUOR SETTLING TEST (11/8/84)

	BTS-1		BTS-2		BTS-3	
Time, min	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	1000	1.1	980	1.07	990	1.09
20	990	1.09	960	1.06	975	1.07
40	980	1.08	935	1.03	955	1.05
50	975	1.07	925	1.02	950	1.04
60	970	1.07	910	1.00	940	1.03
70	965	1.06	900	1.00	930	1.02
80	960	1.06	885	0.97	915	1.00
90	955	1.05	870	0.96	900	0.99
100	950	1.04	855	0.94	885	0.97
110	945	1.04	845	0.93	860	0.95
120	940	1.03	830	0.91	825	0.91

TABLE C-60. MIXED LIQUOR SETTLING TEST (11/9/84)

Time, min	BTS-1 POI (ml)	BTS-1 POI (ft)	BTS-2 POI (ml)	BTS-2 POI (ft)	BTS-3 POI (ml)	BTS-3 POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	998	1.09	985	1.08	998	1.09
20	990	1.09	970	1.07	990	1.09
30	985	1.08	960	1.06	985	1.08
40	980	1.08	940	1.03	970	1.07
50	975	1.07	930	1.02	965	1.06
80	960	1.06	885	0.97	945	1.04
90	955	1.05	870	0.96	940	1.03
100	950	1.04	860	0.95	920	1.01
120	940	1.03	830	0.91	870	0.96

TABLE C-61. MIXED LIQUOR SETTLING TEST (11/11/84)

Time, min	BTS-1 POI (ml)	BTS-1 POI (ft)	BTS-2 POI (ml)	BTS-2 POI (ft)	BTS-3 POI (ml)	BTS-3 POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	1000	1.1	990	1.09	998	1.09
20	995	1.09	975	1.07	990	1.09
40	1000	1.1	950	1.04	980	1.08
80	-*	-	920	1.01	975	1.07
100	850**	0.935	890	0.98	970	1.07
120	800**	0.880	870	0.96	950	1.04

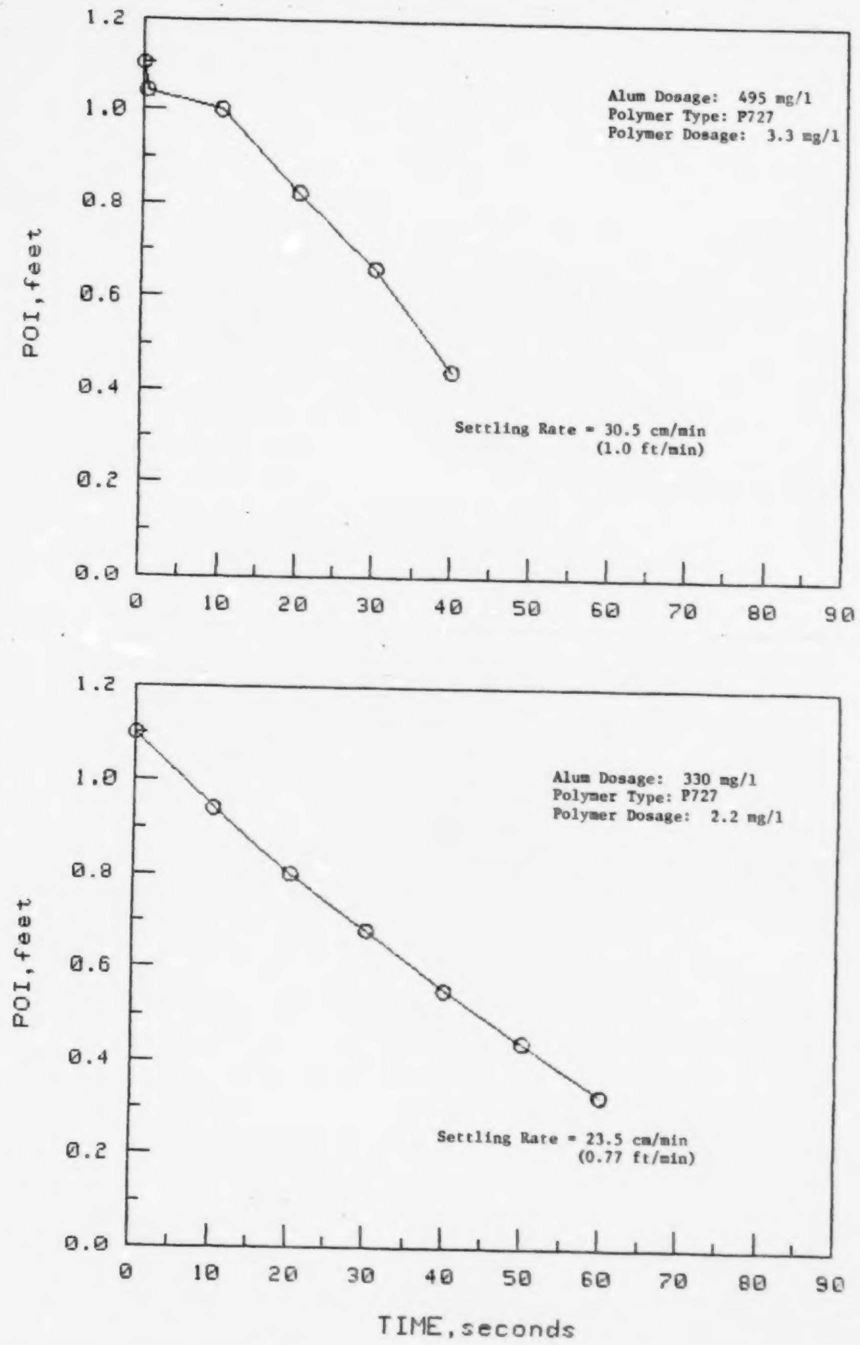
*Dashes indicate no data taken.
**Sample had 20 ml floating solids

TABLE C-62. MIXED LIQUOR SETTLING TEST (11/13/84)

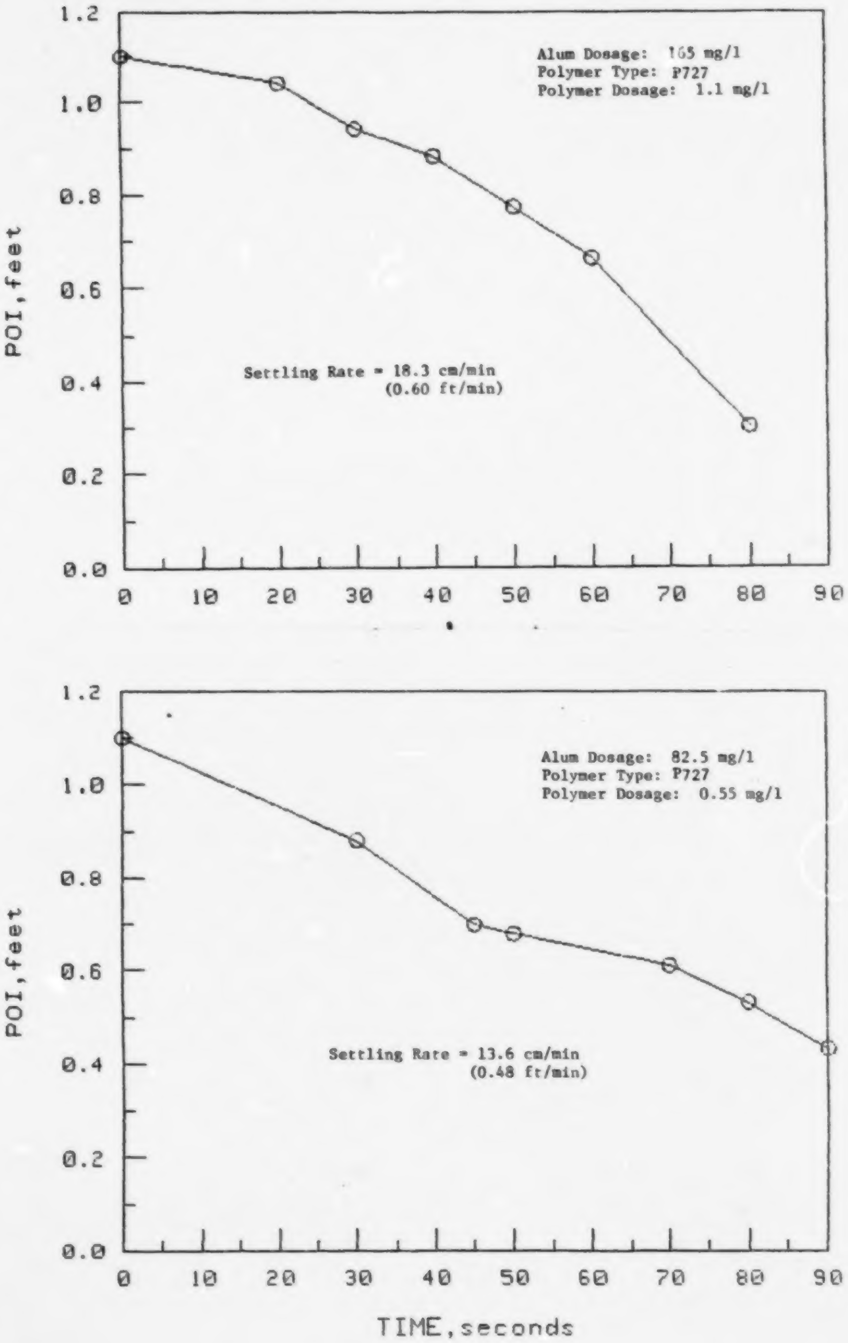
Time, min	BTS-1		BTS-2		BTS-3	
	POI (ml)	POI (ft)	POI (ml)	POI (ft)	POI (ml)	POI (ft)
0	1000	1.1	1000	1.1	1000	1.1
10	1000	1.1	990	1.09	998	1.09
20	995	1.09	975	1.07	990	1.09
30	990	1.09	960	1.06	985	1.08
40	985	1.08	950	1.04	980	1.08
50	980	1.08	938	1.03	980	1.08
60	980	1.08	925	1.02	970	1.07
70	975	1.07	915	1.00	965	1.06
100	960	1.06	870	0.96	950	1.04
120	955	1.05	860	0.95	940	1.03

APPENDIX D

PHYSICAL-CHEMICAL TREATMENT PLANT DATA



Figures D-1 and D-2. Physical-Chemical Settling Tests (10/13/84).



Figures D-3 and D-4. Physical-Chemical Settling Tests (10/13/84).

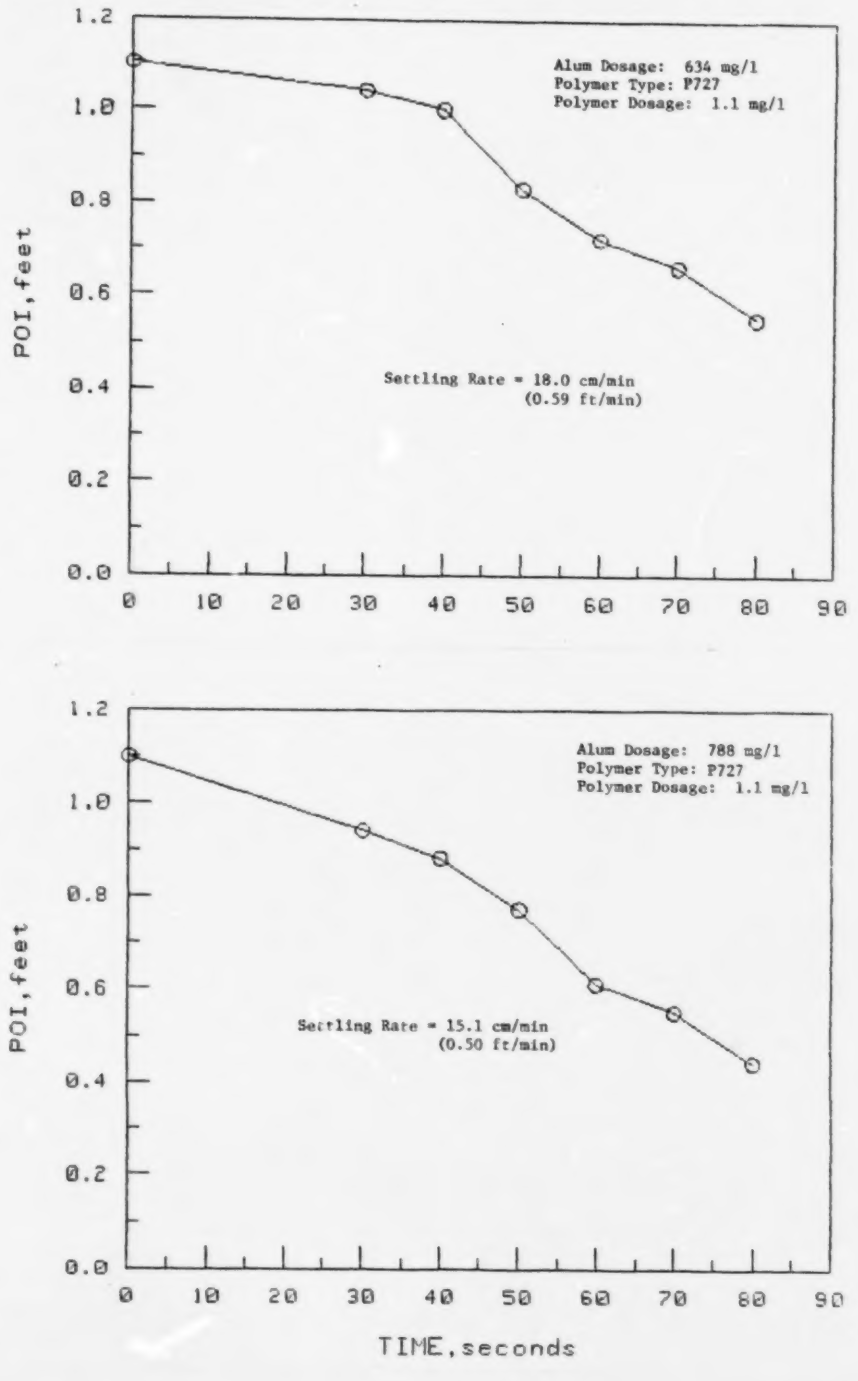


Figure D-5 and D-6. Physical-Chemical Settling Tests (10/13/84).

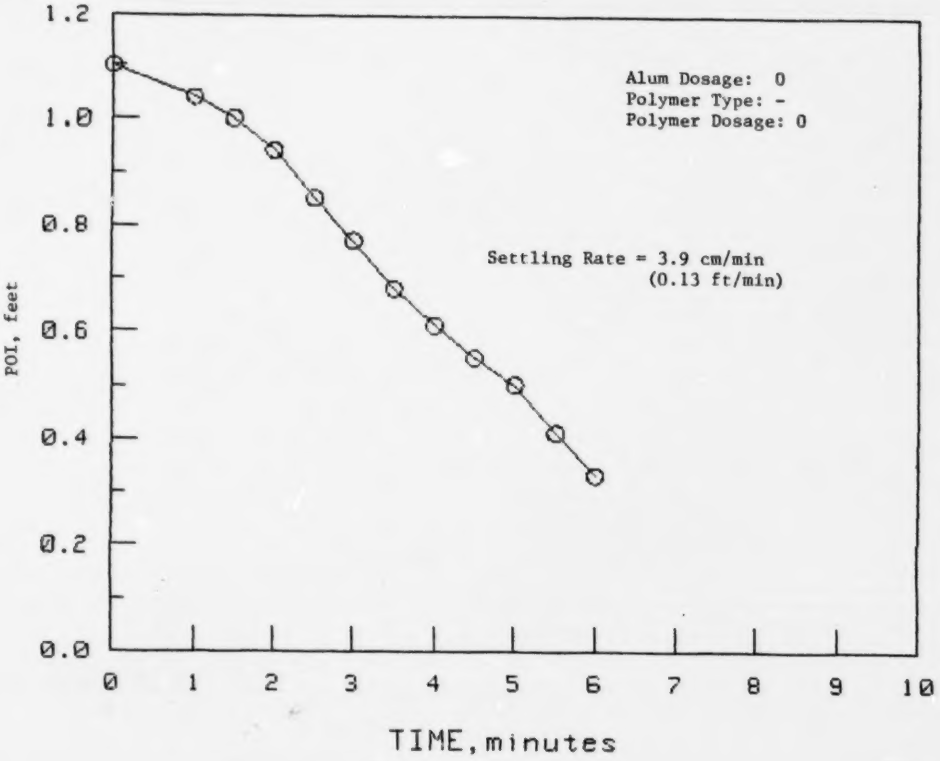
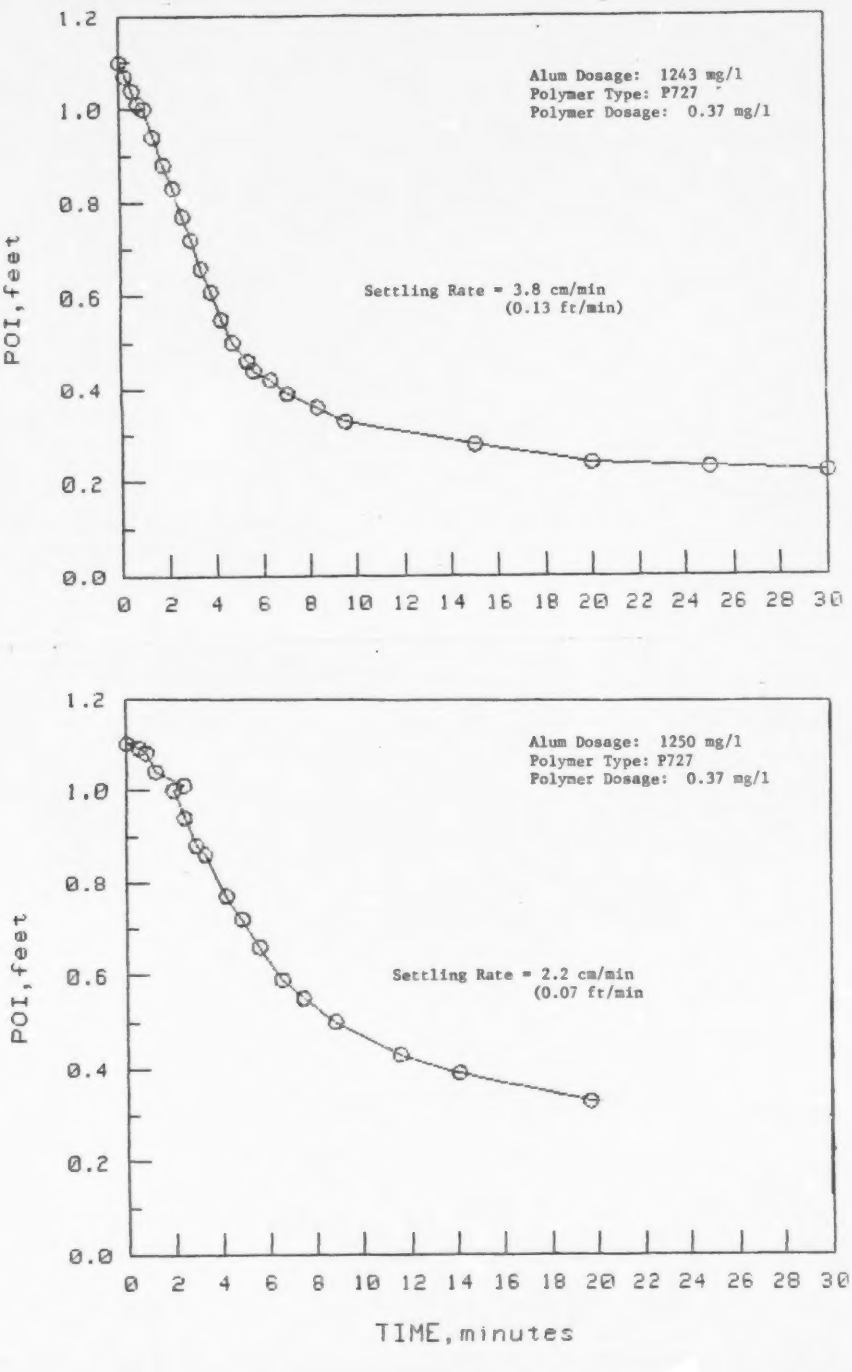


Figure D-7. Physical-Chemical Settling Test (10/13/84).



Figures D-8 and D-9. Physical-Chemical Settling Tests (10/21/84).

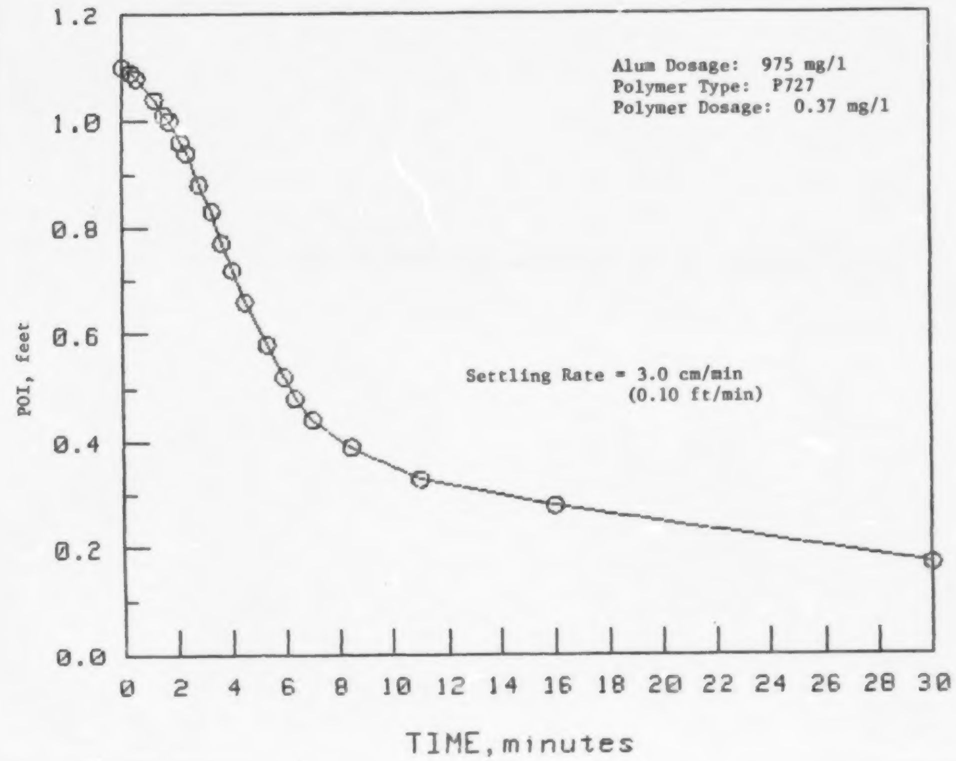
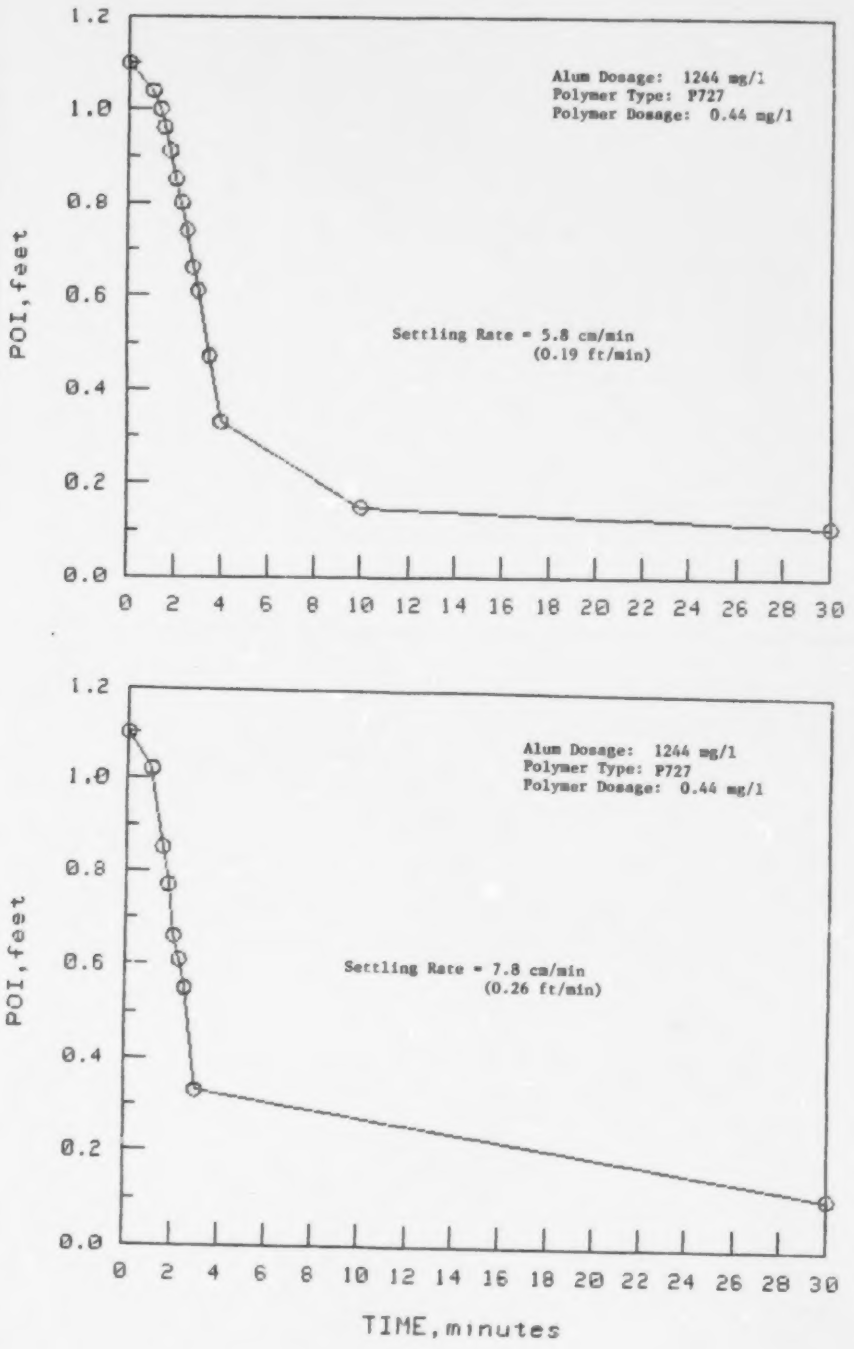
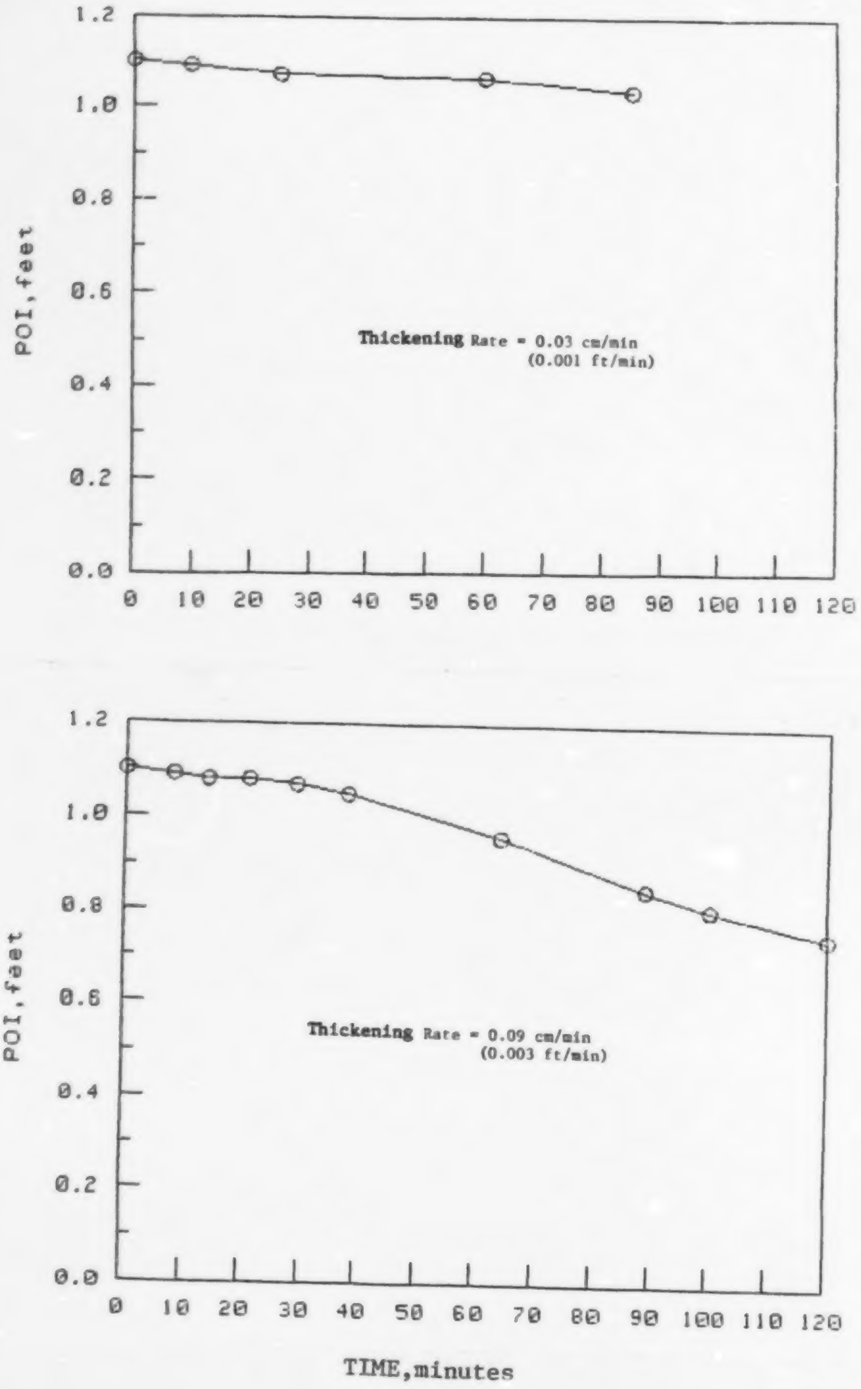


Figure D-10. Physical-Chemical Settling Test (10/25/84).



Figures D-11 and D-12. Physical-Chemical Settling Tests (11/30/84).



Figures D-13 and D-14. Physical-Chemical Thickening Tests (10/21/84).

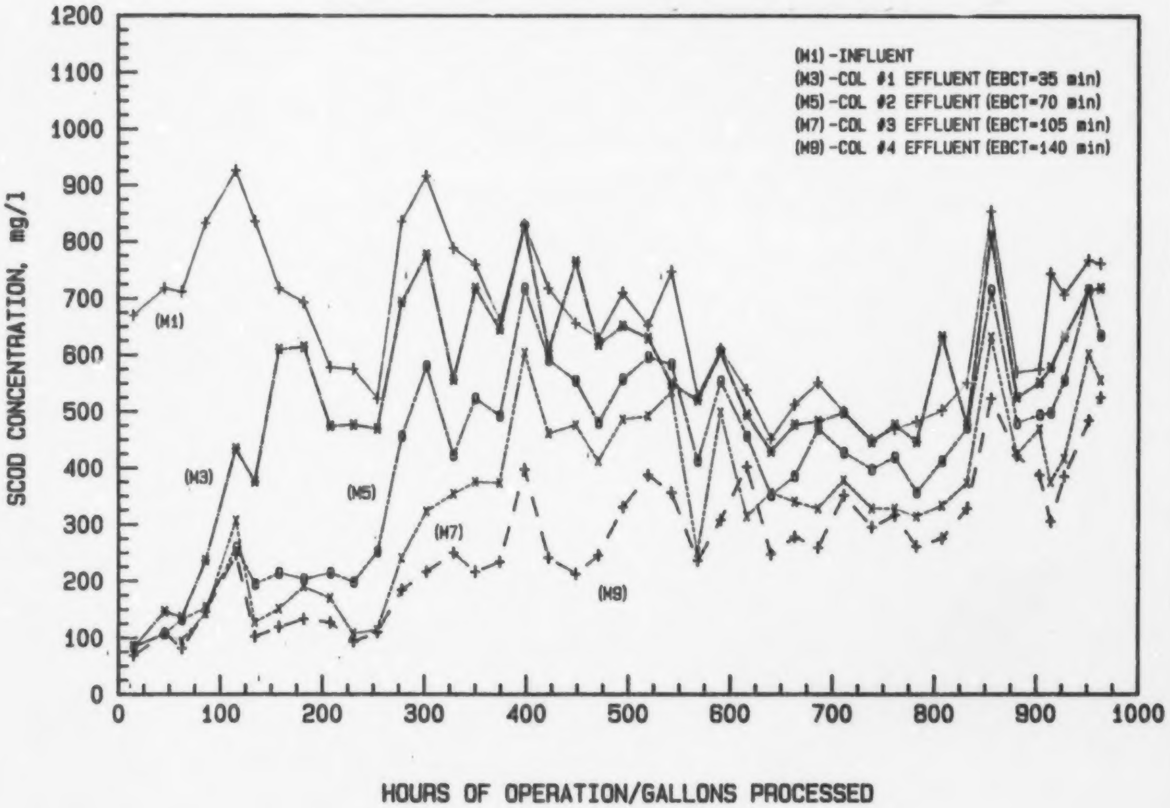


Figure D-15. GAC Run No. 2 Breakthrough Curves for Sample Points M1, M3, M5,M7 and M9.

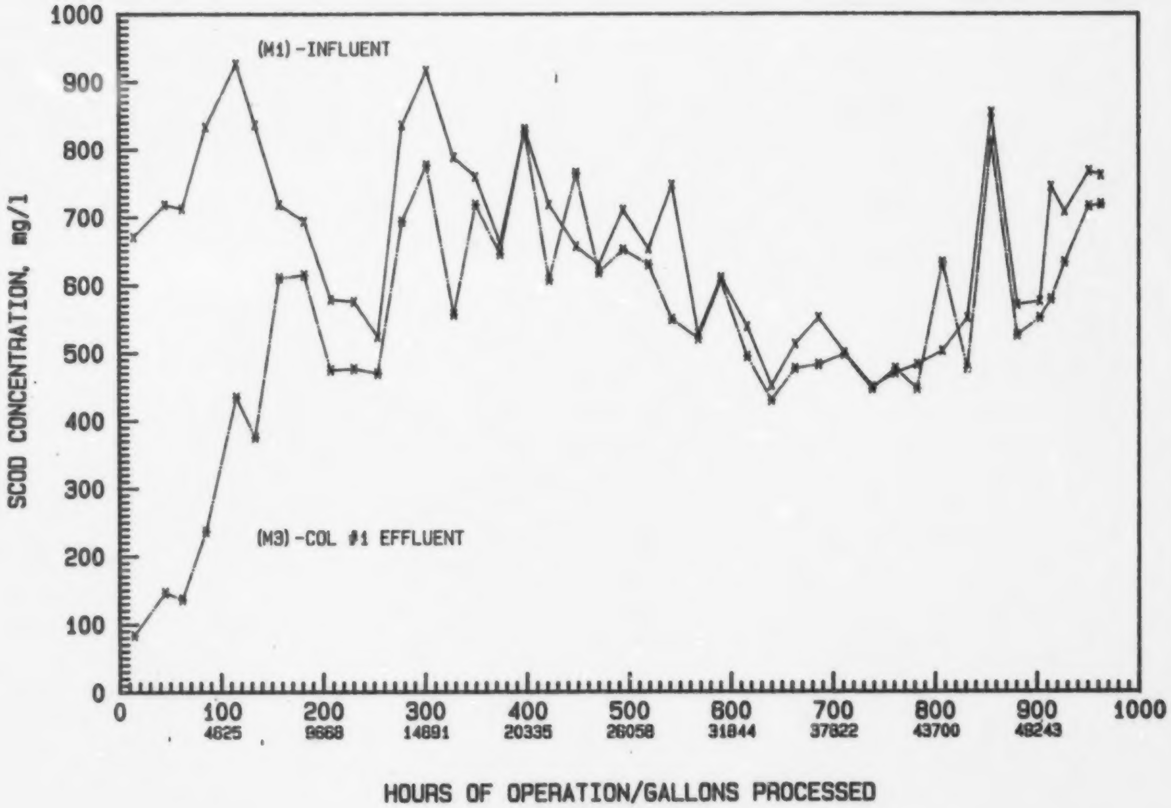


Figure D-16. GAC Run No. 2 Breakthrough Curves for Sample Points M1 and M3.

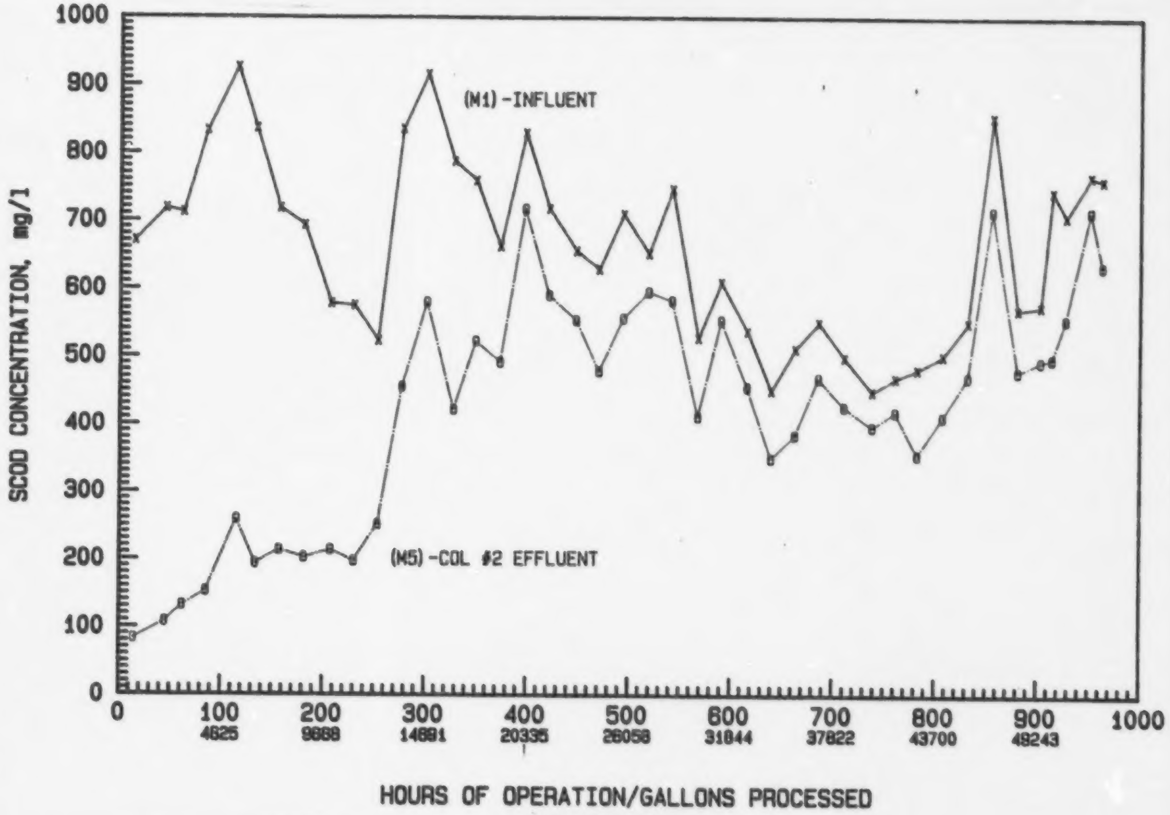


Figure D-17. GAC Run No. 2 Breakthrough Curves for Sample Points M1 and M5.

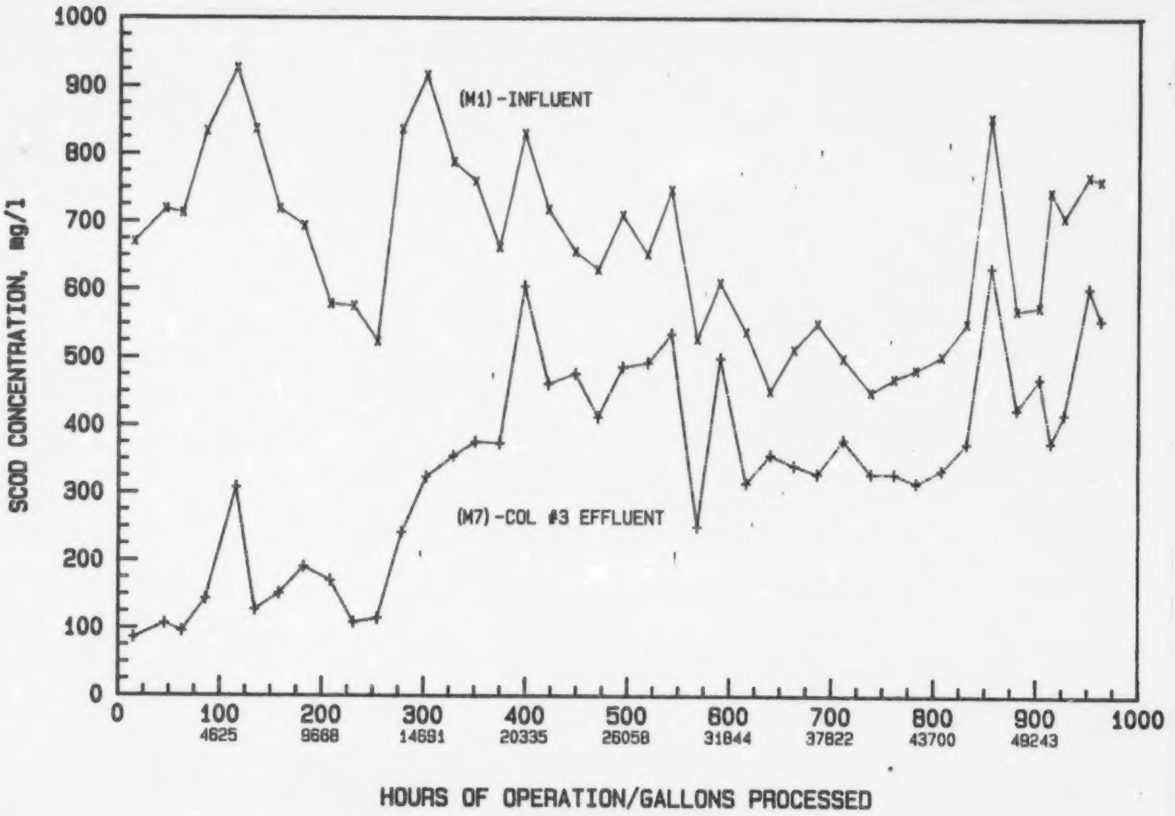


Figure D-18. GAC Run No. 2 Breakthrough Curves for Sample Points M1 and M7.

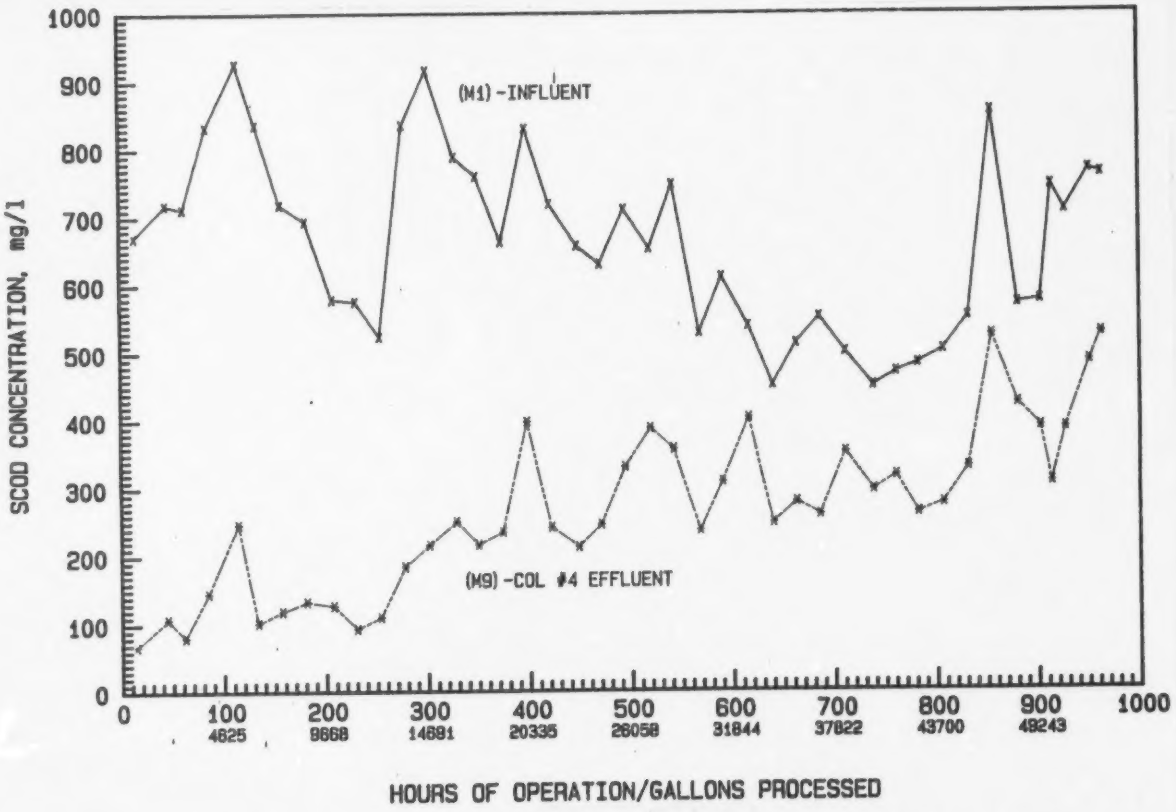


Figure D-19. GAC Run No. 2 Breakthrough Curves for Sample Points M1 and M9.

TABLE D-1. RESULTS OF 9/5/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Time: 1530
Raw Turbidity, NTU:33

Test No.	1	2	3
Polymer Type	P757	P757	-
Polymer Dosage, mg/l	1.0	2.0	0
Mix Time, sec	60	60	0
Flocculation Time, min	2	2	0
Settling Time, min	60	60	60
Effluent Turbidity, NTU	7.0	6.2	6.2

TABLE D-2. RESULTS OF 9/6/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Time: 0800
Raw Turbidity, NTU:78

Test No.	1	2
Polymer Type	-	P757
Polymer Dosage, mg/l	0	5.0
Mix Time, sec	10	10
Flocculation Time, min	2	2
Settling Time, min	10	10
Effluent Turbidity, NTU	15	5.0

TABLE D-3. RESULTS OF 9/8/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Time: 1830
Raw Turbidity, NTU:37

Test No.	1	2	3
Polymer Type	P757	P757	P757
Polymer Dosage, mg/l	5.0	2.0	10.0
Mix Time, sec	10	10	10
Flocculation Time, min	2	2	2
Settling Time, min	15	15	15
Effluent Turbidity, NTU	5.7	6.2	5.7

TABLE D-4. RESULTS OF 9/10/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Time: 1200
Raw pH, units:7.41

Test No.	1	2	3	4
Alum Dosage,mg/l	100	200	300	400
Mix Time, min	1.0	1.0	1.0	1.0
Polymer Type	P757	P757	P757	P757
Polymer Dosage, mg/l	2.0	2.0	2.0	2.0
Mix Time, sec	10	10	10	10
Flocculation Time, min	2	2	2	2
Settling Time, min	10	10	10	10
Effluent Turbidity, NTU	*	*	4.5	5.5
Effluent pH, units	-	7.02	6.87	6.63
Sludge Volume, liters/1000 liters		50	70	30

* Polymer at dosages up to 30 mg/l (P757) were unsuccessful in producing a clear effluent. Bench tests indicated that a dosage of 200 mg/l alum plus 2 mg/l polymer treated the secondary clarifier effluent to a good quality.

TABLE D-5. RESULTS OF 9/13/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent

1. Alum + P757 polymer - good floc/poor settling
   $FeCl_3$ + P757 polymer - good floc/slightly better settling
   Alum + P728 polymer - good settling

2. Dosage Optimizing
   400 mg/l alum + 1 mg/l P728 - poor clarity
   400 mg/l alum + 2 mg/l P728 - best clarity
   400 mg/l alum + 4 mg/l P728 - best clarity

   200 mg/l alum + 4 mg/l P728 - fair clarity
   400 mg/l alum + 4 mg/l P728 - good clarity (pH 6.7)
   600 mg/l alum + 4 mg/l P728 - floc tended to float (pH 6.4)
   200 mg/l $FeCl_3$ + 4 mg/l P728 - some turbidity - floats
   400 mg/l $FeCl_3$ + 4 mg/l P728 - good settling (pH 6.3)
   600 mg/l $FeCl_3$ + 4 mg/l P728 - good clarity -
   - floating floc - gas bubbles (pH 5.5)

TABLE D-6. RESULTS OF 9/13/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Raw Waste pH = 8.4 units

Test No.	Chemicals Added	Final pH, units	Comments
1	Added 200 mg/l $FeCl_3$	7.2	Poor floc formation
2	Added 2000 mg/l $CaCl_2 \cdot 2H_2O$	8.2	Poor floc formation
3	Added 350 mg/l CaO	9.3	Poor floc formation
4	Added 350 mg/l CaO + 350 mg/l $FeCl_3$	8.8	Good floc formation
5	Added 300 mg/l NaOH + 350 mg/l $FeCl_3$	8.7	Poor floc formation
6	Added 150 mg/l CaO + 250 mg/l $FeCl_3$	8.3	Good floc formation
7	Added 250 mg/l CaO + 250 mg/l $FeCl_3$	8.7	Good floc formation. Adding 250 mg/l western Bentonite did not improve settling rate and gave higher effluent turbidity
8	Added 150 mg/l CaO + 150 mg/l $FeCl_3$	8.6	Good floc formation. Adding 150 mg/l western Bentonite resulted in poor floc formation, more turbid effluent and slower settling rate.

TABLE D-7. RESULTS OF 9/19/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1100/1430
Raw Turbidity, NTU:15

Test No.	1	2	3	4	5	6
Alum Dosage, mg/l	400	100	200	300	400	500
Mix Time, min	7	7	7	7	7	7
Polymer Type	P757	P757	P757	P757	P757	P757
Polymer Dosage, mg/l	1.0	1.0	1.0	1.0	1.0	2.0
Mix Time, sec	10	10	10	10	10	10
Flocculation Time, min	2	2	2	2	2	2
Settling Time, min	15	15	15	15	15	15
Effluent Turbidity, NTU	16	*	**	***	-	-
Filtered Eff. Turbidity, NTU 13			12#	12*	5*	

*Hardly any separation
**Poor effluent quality
***Dashes indicate no data taken
#Small amount of hanging floc

TABLE D-8 . RESULTS OF 10/9/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1730

Test No.	1	2	3
Alum Dosage, mg/1	608	608*	**
Polymer Type	P727	P727	P727
Polymer Dosage, mg/1	4.0	4.0	4.0
Settling Time, min		--- Overnight ---	
Effluent Clarity	murky	clear	very clear
Effluent pH, units	***	-	6.36
Material Floating	none	none	none

*Lime also added to pH 8.5
**200 mg/1 $FeCl_3$ added
***Dashes indicate no data taken.

TABLE D-9. RESULTS OF 10/9/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1530
Raw pH, units: 8.03

Test No.	1	2	3	4
Alum Dosage, mg/1	500	200	300	600
Polymer Type	P727	P727	P727	P727
Polymer Dosage, mg/1	2.0	2.0	2.0	4.0
Effluent pH, units	6.68	7.19	6.98	_*

*Dashes indicate no data taken.

TABLE D-10. RESULTS OF 10/17/84 BENCH SCALE TREATMENT TESTING

Waste Source: Secondary Clarifier Effluent
Time: 1200

Test No.	1	2
Alum Dosage, mg/l	1300	1300
Mix Time, min	5	5
Polymer Type	-	P727
Polymer Dosage, mg/l	0	2.0
Mix Time, sec	10	10
Flocculation Time, min	2	2
Settling Time, min	30	30
Effluent Clarity	Cloudy	Cloudy
Sludge Volume, liters/1000 liters	150	150

TABLE D-11. RESULTS OF 10/18/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1200

Test No.	1	2	3	4	5	6	7
Alum Dosage, mg/l	800	800	1500	1500	1500	1500	0
Mix Time, min	5	5	5	5	5	0	
Polymer Type	-	P727	-	P727	P757	P728	P727
Polymer Dosage, mg/l	0	3.0	0	2.0	2.0	2.0	10
Mix Time, sec	10	10	10	10	10	10	10
Flocculation Time, min	2	2	2	2	2	2	2
Settling Time, min	30	30	30	30	30	30	30
Effluent Clarity	Poor	Poor	Poor	Fair	Poor	Poor	Very poor

TABLE D-12. RESULTS OF 10/18/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full Scale Plant Effluent
Time: 1615

Test No.	1	2	3	4	5	6	7	8	9
Alum Dosage, mg/l	0	800	1200	1200	1200	1200*	1200*	800**	800***
Polymer Type	-	P727	P727	P727	P727	-	P727	P727	P727
Polymer Dosage, mg/l		0.25	0.25	0.5	1.0	0	0.5	0.5	1.0
Effluent pH, units	8.36	6.90	6.55						
Effluent Clarity	Very Poor	Poor	Fair	Fair-	Fair- Better Floc	Good- Best Floc	Clear- Good Floc	Poor- Good Floc	Very Poor Good Floc

*Lime to pH 7.8 also added
**Lime to pH 8.0 also added
***Lime to pH 7.5 also added

TABLE D-13. RESULTS OF 10/23/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1500
Raw pH, units:8.35

Test No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Alum Dosage, mg/l	500	1000	1500	500	500**	500***	500#	200	200**	200***	200#	200##	500##	800	1000
Polymer Type								P727	P727	P727	P727	P727	P727	P727	P727
Polymer Dosage, mg/l								1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Filt Eff Tubridity*, NTU					6.0	6.0	6.0	7.0		8.4		8.4			
Effluent pH, units	7.28	6.60	6.28					8.10				7.2###	7.2###		
Effluent Clarity								Very Poor	Very Poor	Very Poor	Very Poor			Clear	Clear ####
Floc Formation	Poor Floc	Good Floc	Very Good Floc					Poor Floc	Poor Floc	Poor Floc	Poor Floc	After Floc	After Floc		

* Filtered through Whatman 541 paper
** Acid addition to pH 7.0
*** Acid addition to pH 6.5
# Acid addition to pH 6.0
## Acid addition to pH 5.5
### After polymer addition, waste was settled. Supernatant was decanted and pH adjusted to 7.2. Decant allowed to stand overnight to look for after-floc.

#### Test #15 filtered better than Test #14 through the Whatman 541 paper.

TABLE D-14. RESULTS OF 11/7/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1300

Test No.	1	2	3	4
Alum Dosage, mg/l	800	1000	1200	1500
Polymer Type*	P727	P727	P727	P727
Polymer Dosage, mg/l	0.4	0.4	0.4	0.4
Effluent Turbidity, NTU	65	55*	52	73
Effluent Clarity	Cloudy	Clear	Very Clear	Very Clear
Sludge Volume, liters/1000 liters		100		

* Took supernatant sample and added 10 mg/l alum plus 1 mg/l P727. The unfiltered turbidity after treatment was 56 NTU. When filtered through a Whatman 541 paper, turbidity was reduced to 45 NTU.

TABLE D-15. RESULTS OF 11/9/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 1030

Test No.	1	2	3	4
Alum Dosage, mg/l	800	1000	1200	1500
Polymer Type	P727	P727	P727	P727
Polymer Dosage, mg/l	0.4	0.4	0.4	0.4
Effluent pH, units	6.39	6.22	5.97	5.62
Effluent Clarity	Cloudy-Hanging Floc	Cloudy-Solids Hanging	Cloudy-Much Solids Hanging	Sludge Floated

TABLE D-16. RESULTS OF 11/10/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 0815

Test No.	1	2	3	4
Alum Dosage, mg/l	800	1000	1200	1500
Polymer Type	P727	P727	P727	P727
Polymer Dosage, mg/l	0.4	0.4	0.4	0.4
Effluent Clarity	Cloudy-Settled Well	Cloudy-Settled Well	V.Clear-Settled V. Well	Sludge Floated

TABLE D-17. RESULTS OF 11/11/84 BENCH SCALE TREATMENT TESTING

Waste Source: Full-Scale Plant Effluent
Time: 0940

Test No.	1	2	3
Alum Dosage, mg/l	800	1000	1200
Polymer Type	P727	P727	P727
Polymer Dosage, mg/l	1.0	1.0	1.0
Effluent Clarity	Cloudy-Settled Well	Clear-Some Floating Solids	V. Clear-Floating Solids

TABLE D-18. RESULTS OF 10/21/84 BENCH SCALE TREATMENT TESTING

Waste Source: Physical-Chemical Clarifier Effluent
Time: 1634
Raw Turbidity, NTU:7.75

Test No.	1	2	3	4	5
Polymer Type	P727	P727	P727	P727	P728
Polymer Dosage, mg/l	0	1.0	0.5	0.15	1.0
Mix Time, sec	0	15	15	15	15
Filtered Eff. Turbidity*, NTU	7.25	7.0	6.8	7.0	8.0

* Filtered through Whatman 541 paper.

TABLE D-19. CLARIFIER INFLUENT ANALYTICAL DATA SUMMARY (SAMPLE POINT J)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
2	09/08/84	72	-*	776	-	7.8	16	34
3	09/09/84	124	74	926	-	7.7	20	36
4	09/10/84	372	160	1320	-	7.7	50	-
5	09/11/84	1560	-	2620	-	7.8	90	37
6	09/12/84	690	-	1800	-	7.8	52	-
6	09/12/84	740	-	1770	-	-	-	-
7	09/13/84	600	-	1460	-	7.7	60	38
8	09/14/84	980	-	1900	-	7.8	84	40
9	09/15/84	1470	-	3180	-	7.8	95	38
10	09/16/84	1080	-	2370	-	7.8	82	37
11	09/17/84**	160	68	999	-	8.2	24	25
12	09/18/84	600	-	1360	-	8.0	55	22
13	09/19/84	148	63	891	-	7.7	20	24
14	09/20/84	65	-	809	-	7.8	14	25
15	09/21/84	108	-	794	-	8.2	18	29
16	09/22/84	440	70	1040	-	8.3	30	29
17	09/23/84	204	61	894	-	8.1	22	28
18	09/24/84	164	-	879	-	8.4	23	28
19	09/25/84	122	64	996	-	8.5	24	28
23	09/29/84	208	100	1050	-	8.6	38	22
25	10/01/84	150	91	857	-	8.5	35	22
27	10/03/84	145	63	894	-	8.3	28	21
30	10/06/84	235	-	1200	-	8.5	46	24
31	10/07/84	200	110	1270	-	8.6	57	21
33	10/09/84	270	71	1230	-	8.4	40	27
34	10/10/84	260	100	1260	897	8.2	46	26
35	10/11/84	248	-	1360	857	8.3	52	28
36	10/12/84	335	99	1310	770	8.5	50	-

(continued)

TABLE D-19 (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
37	10/13/84	295	-	1260	787	8.3	48	-
38	10/14/84	310	-	1320	764	8.3	50	-
39	10/15/84	400	200	2160	1020	8.4	55	-
40	10/16/84	480	-	1830	1130	8.3	60	-
41	10/17/84	593	200	1770	1000	8.0	64	-
42	10/18/84	345	-	-	863	8.6	-	-
43	10/19/84	320	-	-	701	8.5	52	-
44	10/20/84	295	160	1470	773	8.5	53	-
45	10/21/84	300	-	1470	869	8.4	50	-
46	10/22/84	295	-	1440	959	8.6	44	-
47	10/23/84	267	120	1300	803	8.6	47	-
48	10/24/84	285	-	1280	839	8.4	54	-
49	10/25/84	320	160	1430	910	8.3	58	26.5
50	10/26/84	280	-	1350	842	8.4	55	30.5
51	10/27/84	320	-	1680	1010	8.3	74	26
52	10/28/84	555	290	2580	1330	8.0	225	30
53	10/29/84	580	-	2510	1110	8.2	140	28.5
54	10/30/84	460	220	1660	983	8.4	80	28
55	10/31/84	427	-	-	879	8.4	105	-
56	11/01/84	273	-	1250	833	8.4	57	26
57	11/02/84	235	-	-	704	8.5	46	25
58	11/03/84	133	-	-	710	8.4	35	23
59	11/04/84	180	-	-	885	8.2	35	-
60	11/05/84	290	270	1410	1120	8.3	45	23
61	11/06/84	285	-	-	1030	8.2	59	22
62	11/07/84	275	-	-	885	7.9	74	21
63	11/08/84	360	-	-	803	8.2	63	18

(continued)

TABLE D-19. (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
64	11/09/84	300	150	1430	891	8.4	42	21
65	11/10/84	168	-	-	910	8.5	35	23
66	11/11/84	200	140	1290	851	8.4	36	23
67	11/12/84	307	-	-	827	8.4	38	18
68	11/13/84	287	-	-	922	8.3	45	18
69	11/14/84	313	-	-	922	8.4	57	18
70	11/15/84	310	160	1620	857	8.4	56	21
71	11/16/84	295	-	-	803	8.5	49	14
72	11/17/84	280	-	-	812	8.4	55	17
73	11/18/84	245	-	-	715	8.4	55	16
74	11/19/84	175	110	1030	615	8.3	52	16
75	11/20/84	175	-	-	673	8.2	50	15
76	11/21/84	280	-	-	684	7.8	52	16
77	11/22/84	167	-	-	456	8.2	54	16
78	11/23/84	190	96	741	446	8.3	35	17
79	11/24/84	178	-	-	412	8.2	30	-
80	11/25/84	130	66	-	464	8.2	33	-
81	11/26/84	176	90	730	469	8.2	32	-
82	11/27/84	213	-	-	687	8.3	44	-
83	11/28/84	470	340	1760	957	8.0	170	-
84	11/29/84	240	-	773	-	7.9	80	18
85	11/30/84	305	-	-	659	7.9	65	17.5
86	12/01/84	325	360	1220	721	8.1	60	17
87	12/02/84	320	-	-	848	8.0	67	-
88	12/03/84	340	340	1630	964	7.9	72	18
89	12/04/84	293	320	1500	996	7.9	65	17

*Dashes indicate no data taken at that time.

**From 9/8-17, Secondary Clarifier effluent was sampled and analyzed. From 9/17-12/4, the Full-Scale plant effluent was sampled and analyzed.

TABLE D-20. CHEMICAL CLARIFICATION OPERATING PERFORMANCE DATA SUMMARY

Date	9-05-84	9-07-84	9-08-84	9-10-84	9-10-84	9-10-84	9-20-84	9-21-84	9-22-84	9-23-84	9-25-84	9-26-84	9-28-84	9-29-84
Time	1700	1010	1419	1300	1900	--	1200	1045	1025	1040	1220	1030	1600	1550
Influent Flow														
l/min	23	23	23	15	19	19	23	23	23	24	25	25	25	24
gal/min	6.0	6.0	6.0	4.0	5.0	5.0	6.0	6.0	6.0	6.3	6.5	6.5	6.5	6.3
Overflow Rate														
$m^3/day/m^2$	12	12	12	8	10	10	12	12	12	13	13	13	13	13
gpd/ft^2	305	305	305	203	254	254	305	305	305	318	330	330	330	320
Flocculation speed, RPM	-*	-	25	25	-	-	-	-	-	5	4.5	4.6	3	4
Alum Dose, mg/l	N/A	N/A	N/A	200	200	200	400	495	495	538	518	500	518	513
Rapid Mix time, min	16.7	16.7	16.7	25	20	20	16.7	16.7	16.7	16	15.4	15.4	15.4	15.9
Polymer Type	N/A **	N/A	N/A	P757	P757	P757	P757	P757	P757	P757	P757	P757	P757	P757
Polymer Dose***, mg/l	N/A	N/A	N/A	2.0	2.0	2.1	1.0	1.0	1.0	1.9	1.9	2.0	1.9	2.1
Caustic usage pH adjusted to	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued)

TABLE D-20. (continued)

Date	9-30-84	10-1-84	10-2-84	10-3-84	10-5-84	10-6-84	10-7-84	10-8-84	10-9-84	10-10-84	10-11-84	10-12-84	10-15-84	10-16-84
Time	1045	1620	1630	1755	1610	2200	2100	1745	1830	1845	1820	1523	1200	0945
Influent Flow														
l/min	24	25	25	25	25	25	25	25	25	25	25	19	19	19
gal/min	6.3	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	5.0	5.0	5.0
Overflow Rate														
$m^3/day/m^2$	13	13	13	13	13	13	13	13	13	13	13	10	10	10
gpd/ft^2	320	330	330	330	330	330	330	330	330	330	330	254	254	254
Flocculation speed, RPM	4	4	4	4	6	-	-	4	4	4	4	-	7	-
Alum Dose, mg/l	459	533	609	609	609	-	518	590	629	590	567	640	670	652
Rapid Mix time, min	15.8	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Polymer Type	P757	P757	P757	P757	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727
Polymer Dose***, mg/l	2.1	2.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.3	0.5	0.6
Caustic usage pH adjusted to	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued)

TABLE D-20. (continued)

Date	10-18-84	10-20-84	10-21-84	10-22-84	10-23-84	10-24-84	10-25-84	10-26-84	10-27-84	10-28-84	10-29-84	10-30-84	10-31-84	11-1-84
Time	-	0945	1058	1142	1202	1900	1628	1315	0830	1115	1815	1418	1414	1110
Influent Flow														
1/min	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
gal/min	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Overflow Rate														
$m^3/day/m^2$	10	10	10	10	10	10	10	10	10	10	10	10	10	10
gpd/ft^2	254	254	254	254	254	254	254	254	254	254	254	254	254	254
Flocculation speed, RPM	-	10	10	10	10	10	10	10	10	10	10	10	10	10
Alum Dose, mg/1	792	1341	1243	1219	1195	1066	975	762	762	915	902	921	-	762
Rapid Mix time, min	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Polymer Type	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727
Polymer Dose***, mg/1	0.4	0.3	0.4	0.4	0.3	-	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3
Caustic Usage pH adjusted to	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued)

TABLE D-20. (continued)

Date	11-2-84	11-3-84	11-5-84	11-6-84	11-7-84	11-8-84	11-9-84	11-10-84	11-11-84	11-12-84	11-13-84	11-14-84	11-15-84	11-16-84
Time	1320	1203	1014	1017	1130	-	1005	1042	1206	1343	1212	1134	1430	2100
Influent Flow														
1/min	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9	18.9
gal/min	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Overflow Rate														
$m^3/day/m^2$	10	10	10	10	10	10	10	10	10	10	10	10	10	10
gpd/ft^2	254	254	254	254	254	254	254	254	254	254	254	254	254	254
Flocculation speed, RPM	10	10	10	10	10	7	9	9	9	9	9	9	9	9
Alum Dose, mg/1	793	780	1067	854	817	762	976	945	1189	1097	1097	1128	1073	1085
Rapid Mix time, min	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Polymer Type	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727
Polymer Dose ***, mg/1	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Caustic usage pH adjusted to	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued)

TABLE D-20. (continued)

Date	11-17-84	11-18-84	11-19-84	11-20-84	11-21-84	11-22-84	11-23-84	11-24-84	11-25-84	11-26-84	11-27-84	11-28-84	11-29-84	11-30-84
Time	1400	2030	1830	1720	1715	1055	1145	1215	1440	1603	1700	1800	1800	1615
Influent Flow														
l/min	18.9	18.9	18.9	17.0	17.0	17.0	17.0	17.0	17.0	17.0	7.0	17.0	17.0	17.0
gal/min	5.0	5.0	5.0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5	4.5	4.5	4.5
Overflow Rate														
$m^3/day/m^2$	10	10	10	9	9	9	9	9	9	9	9	9	9	9
gpd/ft^2	254	254	254	229	229	229	229	229	229	229	229	229	229	229
Flocculation speed, RPM	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Alum Dose, mg/l	1097	1049	1073	1085	1256	1256	1293	945	1097	1329	1311	1341	1280	1244
Rapid Mix time, min	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Polymer Type	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727	P727
Polymer Dose***, mg/l	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Caustic usage pH adjusted to	N/A	N/A	N/A	N/A	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5

(continued)

TABLE D-20.

Date	12-01-84	12-03-84	12-04-84
Time	0834	1005	1730
Influent Flow			
1/min	17	17	17
gal/min	4.5	4.5	4.5
Overflow Rate			
$m^3/day/m^2$	9	9	9
gpd/ft^2	229	229	229
Flocculation speed, RPM	9	9	9
Alum Dose, mg/1	1244	1256	1189
Rapid Mix time, min	15.4	15.4	15.4
Polymer Type	P727	P727	P727
Polymer Dose ***, mg/1	0.4	0.4	0.4
Caustic usage pH adjusted to	6.5	6.5	6.5

*Dashes indicate no data recorded at that time.
**N/A - Not Applicable - system not operational at that time.
***The polymer rapid mix time prior to flocculation was 10 seconds.

TABLE D-21. CLARIFIER EFFLUENT/MULTI-MEDIA FILTER INFLUENT ANALYTICAL DATA SUMMARY (SAMPLE POINT K)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
2	09/08/84	168	-*	879	-	7.8	22	36
4	09/10/84	177	73	961	752	7.9	22	-
5	09/11/84	360	-	1130	721	7.8	40	-
15	09/21/84	135	20	659	589	7.1	26	27.5
16	09/22/84	214	50	830	618	7.5	31	23
17	09/23/84	140	22	665	567	7.3	26	-
18	09/24/84	242	-	815	599	7.6	35	29
19	09/25/84	176	33	833	676	7.6	30	29
20	09/26/84	236	54	851	631	7.6	41	23
21	09/27/84	960	>110	1430	664	7.7	125	21
22	09/28/84	387	77	973	687	7.7	62	22.5
23	09/29/84	313	62	929	631	7.5	64	25
24	09/30/84	360	60	897	607	7.6	57	23.5
25	10/01/84	210	43	730	718	7.4	57	22
25	10/01/84	230	40	730	721	7.4	57	22
26	10/02/84	260	46	770	634	7.6	95	20
27	10/03/84	310	50	851	583	7.2	70	23
28	10/04/84	230	38	715	602	7.2	41	24.5
29	10/05/84	220	38	770	629	7.2	52	27
30	10/06/84	220	49	957	712	7.5	66	24.5
31	10/07/84	170	69	1200	848	7.6	63	25
32	10/08/84	215	58	1010	794	7.5	50	27
33	10/09/84	164	32	833	833	7.4	40	27
34	10/10/84	320	88	1030	665	7.4	63	26
35	10/11/84	250	89	1090	718	7.6	62	28
36	10/12/84	115	47	954	803	7.4	38	-
38	10/14/84	195	-	1190	684	7.9	41	-

(continued)

TABLE D-21. (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
40	10/16/84	245	180	1330	922	7.0	57	-
41	10/17/84	627	200	1740	1030	7.1	84	-
41	10/17/84	151	120	1230	854	6.7	52	-
44	10/20/84	41	51	863	687	7.2	21	-
45	10/21/84	32	42	863	693	6.9	21	-
46	10/22/84	34	98	900	791	6.9	20	-
47	10/23/84	51	26	747	621	7.0	20	-
48	10/24/84	35	31	707	629	6.8	21	-
49	10/25/84	137	61	848	738	7.0	41	25.5
50	10/26/84	75	68	879	676	7.1	33	29
51	10/27/84	133	140	1120	842	7.0	56	26
52	10/28/84	280	260	1760	1050	6.9	200	29
53	10/29/84	280	270	1990	882	7.1	175	30
54	10/30/84	184	130	1140	839	7.0	86	29
55	10/31/84	148	90	993	756	7.0	67	-
56	11/01/84	120	38	833	659	7.1	60	25
57	11/02/84	115	33	744	599	6.9	45	24
58	11/03/84	68	21	687	572	6.8	39	20
59	11/04/84	56	60	797	747	6.8	33	-
60	11/05/84	115	150	1060	941	6.8	48	23
61	11/06/84	230	160	1170	718	6.8	93	21
62	11/07/84	185	190	1190	753	6.8	150	18
63	11/08/84	207	110	1050	710	6.7	98	17
64	11/09/84	285	150	1160	750	7.8	58	18
65	11/10/84	104	69	954	684	7.1	65	21
66	11/11/84	125	44	879	659	6.8	65	22
67	11/12/84	205	67	900	747	6.9	73	18
68	11/13/84	156	96	1020	712	6.8	91	18

(continued)

TABLE D-21. (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
69	11/14/84	123	99	1090	687	6.9	97	18
70	11/15/84	200	65	996	632	6.9	90	21
71	11/16/84	100	68	806	732	6.9	70	15
72	11/17/84	175	60	911	637	7.0	95	-
73	11/18/84	160	70	833	567	6.9	99	18
74	11/19/84	83	30	618	502	6.6	71	17
75	11/20/84	52	24	602	487	6.7	37	16
76	11/21/84	76	43	604	551	6.4	43	-
77	11/22/84	114	-	656	330	7.0	55	-
78	11/23/84	82	28	441	351	7.1	40	-
79	11/24/84	81	19	407	351	7.2	26	-
80	11/25/84	43	18	400	347	6.9	24	-
81	11/26/84	62	23	436	363	6.9	24	-
82	11/27/84	86	72	554	494	7.2	35	-
83	11/28/84	120	270	1060	842	7.2	55	-
84	11/29/84	98	170	941	670	6.7	82	19.5
85	11/30/84	143	110	830	567	6.6	80	19
86	12/01/84	160	200	756	525	7.1	95	18.5
87	12/02/84	186	190	1080	715	7.3	83	-
88	12/03/84	200	200	1240	794	7.0	150	15
89	12/04/84	240	100	1130	744	6.9	150	18

*Dashes indicate no data taken at that time.

TABLE D-22. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (10/13/84)

Date	10/13/84		10/13/84		10/13/84		10/13/84		10/13/84		10/13/84	
Test No.	1		2		3		4		5		6	
Alum, mg/l	495		330		165		82.5		634		788	
Polymer Type	P727		P727		P727		P727		P727		P727	
Polymer Dosage, mg/l	3.3		2.2		1.1		0.55		1.1		1.1	
	POI		POI		POI		POI		POI		POI	
Time,sec	ml	ft	ml	ft	ml	ft	ml	ft	ml	ft	ml	ft
0	1000	1.10	1000	1.10	1000	1.10	1000	1.10	1000	1.10	1000	1.10
.5	950	1.04										
10	908	1.00	850	0.94								
20	750	0.83	730	0.80	950	1.04						
30	600	0.66	620	0.68	850	0.94	800	0.88	950	1.04	850	0.94
40	400	0.44	500	0.55	800	0.88			900	1.00	800	0.88
45							700	0.70				
50			400	0.44	700	0.77			750	0.83	700	0.77
60			300	0.33	600	0.66	620	0.68	650	0.72	550	0.61
70							550	0.61	600	0.66	500	0.55
80					300	0.30	480	0.53	500	0.55	400	0.44
90							390	0.43				
	Very Large Floc		Large Floc		Large Floc		Small Floc Normal					

TABLE D-23. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (10/13/84)

Date	10/13/84
Test No.	7
Alum, mg/l	0
Polymer Type	-
Polymer Dosage, mg/l	0

	POI	
Time,min.	ml	ft
0	1000	1.10
1	950	1.04
1.5	900	1.00
2	850	0.94
2.5	775	0.85
3	700	0.77
3.5	620	0.68
4	550	0.61
4.5	500	0.55
5	450	0.50
5.5	375	0.41
6	300	0.33

TABLE D-24. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (10/21/84)

Date	10/21/84
Test No.	1
Alum, mg/l	1243
Polymer Type	P727
Polymer Dosage, mg/l	0.37

	POI	
Time,min	ml	ft
0.0	1000	1.10
0.3	970	1.07
0.5	950	1.04
0.8	920	1.01
1.0	900	1.00
1.4	850	0.94
1.8	800	0.88
2.2	750	0.83
2.6	700	0.77
3.0	650	0.72
3.4	600	0.60
3.8	550	0.61
4.3	500	0.55
4.8	450	0.50
5.4	420	0.46
5.6	400	0.44
6.3	380	0.42
7.0	350	0.39
8.3	330	0.36
9.5	300	0.33
15	250	0.28
20	220	0.24
25	210	0.23
30	200	0.22

TABLE D-25. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (10/21/84)

Date	10/21/84
Test No.	2
Alum, mg/l	1250
Polymer Type	P727
Polymer Dosage, mg/l	0.37

	POI	
Time,min	ml	ft
0	1000	1.10
0.5	990	1.09
0.8	980	1.08
1.2	950	1.00
2.4	920	1.01
2.0	900	1.00
2.4	850	0.94
2.9	800	0.88
3.3	780	0.86
4.3	700	0.77
4.9	650	0.72
5.6	600	0.66
6.6	540	0.59
7.5	500	0.55
8.9	450	0.50
11.6	390	0.43
14.1	350	0.39
19.7	300	0.33
36	250	0.29

TABLE D-26. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (10/25/84)

Date	10/25/84
Test No.	1
Alum, mg/l	975
Polymer Type	P727
Polymer Dosage, mg/l	0.37

	POI	
Time, min	ml	ft
0	1000	1.10
0.3	990	1.09
0.5	980	1.08
1.2	950	1.04
1.5	920	1.01
1.7	900	1.00
2.1	870	0.96
2.4	850	0.94
2.8	800	0.88
3.3	750	0.83
3.7	700	0.77
4.1	650	0.72
4.6	600	0.66
5.4	530	0.58
6.0	470	0.52
6.4	440	0.48
7.0	400	0.44
8.5	350	0.39
11.0	300	0.33
16.0	250	0.28
30.0	150	0.17

TABLE D-27. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION SETTLING TEST (11/30/84)

Date	11/30/84	11/30/84
Test No.	1	2
Alum, mg/l	1244	1244
Polymer Type[A]	P727	P727
Polymer Dosage, mg/l	0.44	0.44

	POI		POI	
Time,min	ml	ft	ml	ft
0	1000	1.10	1000	1.10
1.0	950	1.04	925	1.02
1.3	900	1.00		
1.5	875	0.96	770	0.85
1.8	825	0.91	700	0.77
2.0	775	0.85	600	0.66
2.3	725	0.80	550	0.61
2.5	675	0.74	500	0.55
2.8	600	0.66		
3	550	0.61	300	0.33
3.5	425	0.47		
4	300	0.33		
10	140	0.15		
30	98	0.11	95	0.11

TABLE D-28. RESULTS OF PHYSICAL-CHEMICAL STUDY-CLARIFICATION THICKENING TEST (10/21/84)

Date	10/21/84		10/21/84	
Test No.	1		2	
	POI		POI	
Time, min	ml	ft	ml	ft
0	1000	1.10	1000	1.10
8			990	1.09
9.5	990	1.09		
14			985	1.08
21			980	1.08
25	970	1.07		
29			970	1.07
38			955	1.05
60	960	1.06		
64			875	0.96
85	935	1.03		
89			775	0.85
100			740	0.81
120			680	0.75

TABLE D-29. MULTI-MEDIA FILTER EFFLUENT ANALYTICAL DATA SUMMARY
(SAMPLE POINT L)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
2	09/08/84	51	-*	759	-	8.1	15	35.5
4	09/10/84	66	57	857	732	8.0	13	-
5	09/11/84	1400	-	1070	715	7.7	30	-
15	09/21/84	58	20	626	587	7.2	8	27.5
15	09/21/84	54	20	613	598	-	-	-
16	09/22/84	148	57	779	659	7.5	24	23
17	09/23/84	61	26	604	588	7.4	8	-
18	09/24/84	112	-	701	591	7.6	23	28
19	09/25/84	110	21	744	679	7.7	10	28
20	09/26/84	134	42	750	626	7.7	29	20
21	09/27/84	1180	>110	1980	604	7.8	125	19.5
22	09/28/84	327	73	958	701	7.8	53	20
23	09/29/84	210	55	833	599	7.7	58	22
24	09/30/84	220	50	785	637	7.7	45	20
25	10/01/84	135	30	712	692	7.5	47	20
26	10/02/84	130	31	645	645	7.4	84	17
26	10/02/84	120	32	693	607	7.4	84	17
27	10/03/84	195	39	779	580	7.4	51	21
28	10/04/84	142	29	693	629	7.5	44	21
29	10/05/84	190	38	926	662	7.3	50	26.5
30	10/06/84	190	49	990	983	7.6	61	24
31	10/07/84	270	76	1230	983	7.7	65	25
32	10/08/84	155	51	961	830	7.5	48	25.5
33	10/09/84	127	31	806	607	7.5	43	27
34	10/10/84	250	81	935	594	-	53	25
35	10/11/84	212	86	1050	747	7.5	59	-
36	10/12/84	139	45	869	662	7.5	38	-

(continued)

TABLE D-29. (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, ^{o}C
38	10/14/84	123	-	1010	673	7.9	35	-
41	10/17/84	143	120	1290	854	6.8	49	-
44	10/20/84	33	47	848	715	7.2	22	-
45	10/21/84	29	35	857	698	7.0	21	-
46	10/22/84	17	160	985	894	7.0	20	-
47	10/23/84	24	25	753	626	7.1	19	-
48	10/24/84	13	32	684	656	6.9	18	-
49	10/25/84	56	71	851	753	7.0	27	-
50	10/26/84	54	59	866	701	7.2	31	-
51	10/27/84	85	140	1080	803	7.1	54	-
52	10/28/84	230	280	1710	1070	7.0	220	-
53	10/29/84	245	270	1880	957	7.1	175	-
54	10/30/84	168	130	1230	807	7.1	85	-
55	10/31/84	128	97	954	747	7.1	65	-
56	11/01/84	130	30	803	632	7.1	55	-
57	11/02/84	83	31	738	588	7.0	44	-
58	11/03/84	46	18	673	551	6.9	37	-
59	11/04/84	48	69	776	670	6.9	32	-
60	11/05/84	95	150	1000	926	6.9	46	-
61	11/06/84	160	210	1590	860	7.0	85	-
62	11/07/84	93	190	1230	715	6.8	145	-
63	11/08/84	162	100	1080	673	6.8	95	-
64	11/09/84	215	130	1160	791	7.7	54	-
65	11/10/84	107	64	961	712	7.1	60	-
66	11/11/84	117	48	916	634	6.9	63	-
67	11/12/84	172	75	872	724	7.0	71	-
68	11/13/84	167	84	993	632	6.8	145	-
69	11/14/84	162	96	1030	662	6.9	95	-
70	11/15/84	207	79	961	629	6.9	88	-

(continued)

TABLE D-29. (continued)

DAY	DATE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
71	11/16/84	113	72	761	687	6.9	69	-
72	11/17/84	135	71	916	662	7.0	95	-
73	11/18/84	160	72	833	564	6.8	96	-
74	11/19/84	55	33	637	530	6.6	70	-
75	11/20/84	24	22	580	482	6.7	30	-
76	11/21/84	34	38	604	520	6.4	37	-
77	11/22/84	68	-	637	400	7.0	48	-
78	11/23/84	51	26	422	328	7.1	35	-
79	11/24/84	53	18	375	349	7.2	31	-
80	11/25/84	15	-	371	328	6.9	20	-
81	11/26/84	25	20	412	375	6.9	18	-
82	11/27/84	38	60	551	479	7.2	33	-
83	11/28/84	91	260	1070	857	7.1	55	-
84	11/29/84	78	220	951	656	6.8	77	20.5
85	11/30/84	122	100	785	554	6.6	78	19.5
86	12/01/84	136	160	673	523	7.0	68	18.5
87	12/02/84	152	230	1080	710	7.3	80	-
88	12/03/84	180	200	1240	788	7.0	150	18.5
89	12/04/84	238	100	1130	744	6.8	160	17.0

*Dashes indicate no data taken at that time.

TABLE D-30. ACTIVATED CARBON INFLUENT ANALYTICAL DATA SUMMARY
(SAMPLE POINTS M1 AND M)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
5	09/11/84	#	-**	-	851	-	-	-
5	09/11/84	*	177	970	744	7.7	29	-
19	09/25/84	*	88	738	632	7.9	28	29
20	09/26/84	#	-	-	626	-	-	-
20	09/26/84	*	115	759	575	7.8	29	24
21	09/27/84	#	-	-	710	-	-	-
21	09/27/84	*	348	1020	654	7.9	65	-
22	09/28/84	#	-	-	422	-	-	-
22	09/28/84	*	217	922	637	7.8	58	22
23	09/29/84	#	-	-	687	-	-	-
23	09/29/84	*	204	843	583	7.7	56	25
24	09/30/84	#	-	-	645	-	-	-
24	09/30/84	*	218	809	632	7.7	49	24
25	10/01/84	#	-	-	665	-	-	-
25	10/01/84	*	148	990	926	7.6	47	23.5
26	10/02/84	#	-	-	651	-	-	-
26	10/02/84	*	100	744	588	7.4	67	21
26	10/02/84	*	104	741	580	7.4	67	21
27	10/03/84	#	-	-	572	-	-	-
27	10/03/84	#	-	-	578	-	-	-
27	10/03/84	*	190	747	676	7.2	45	23
28	10/04/84	#	-	-	602	-	-	-
28	10/04/84	*	136	730	572	7.3	34	27
29	10/05/84***	*	155	767	-	-	-	-
29	10/05/84	*	145	744	628	7.3	51	27.5
29	10/05/84	#	-	-	654	-	-	-
30	10/06/84	*	167	891	809	7.7	59	26.5

(continued)

TABLE D-30. (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
30	10/06/84	#	-	-	632	-	-	-
31	10/07/84	#	-	1160	-	-	-	-
31	10/07/84	*	180	1120	957	7.7	57	27
32	10/08/84	#	220	1530	866	-	-	-
32	10/08/84	*	147	1020	860	7.6	52	28
33	10/09/84	#	-	-	1050	-	-	-
33	10/09/84	*	93	818	659	7.5	38	29
34	10/10/84	#	-	-	710	7.1	39	28.5
34	10/10/84	*	195	885	578	7.5	52	27.5
35	10/11/84	#	-	-	637	7.3	67	28.5
35	10/11/84	*	200	1080	779	7.5	61	28
36	10/12/84	#	-	-	747	7.0	49	27
48	10/24/84	*	14	718	637	6.8	20	-
49	10/25/84	#	-	-	670	6.5	7	-
49	10/25/84	*	88	894	744	7.0	40	-
50	10/26/84	#	-	-	718	-	-	-
50	10/26/84	*	43	866	679	7.2	35	-
51	10/27/84	#	-	-	712	6.9	41	-
51	10/27/84	*	63	990	818	7.1	49	-
52	10/28/84	#	-	-	833	6.8	78	-
52	10/28/84	*	163	1740	1020	6.9	215	28
53	10/29/84	#	-	-	926	6.8	220	-
53	10/29/84	*	145	1940	882	7.1	220	-
54	10/30/84	#	-	-	836	6.7	175	-
54	10/30/84	*	138	1310	866	7.1	93	-
55	10/31/84	#	-	-	718	6.8	74	-
55	10/31/84	*	94	1010	750	7.1	66	-

(continued)

TABLE D-30. (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
56	11/01/84	#	-	-	693	6.6	55	-
56	11/01/84	*	112	879	604	7.0	63	25.5
57	11/02/84	#	-	-	578	6.8	60	-
57	11/02/84	*	77	860	588	7.0	45	-
57	11/02/84	#	-	-	575	6.6	37	-
58	11/03/84	*	38	687	572	6.9	38	-
59	11/04/84	#	-	-	523	6.5	30	-
59	11/04/84	*	36	718	659	6.8	30	-
60	11/05/84	#	-	-	836	6.7	37	-
60	11/05/84	*	95	1050	910	6.9	44	-
61	11/06/84	#	-	-	916	6.6	56	-
61	11/06/84	*	130	1320	830	7.0	81	-
62	11/07/84	#	-	-	788	6.8	98	-
62	11/07/84	*	143	1190	690	6.9	149	18
63	11/08/84	#	-	-	759	6.5	150	-
63	11/08/84	*	164	1210	681	6.7	100	17.5
64	11/09/84	#	-	-	662	6.4	91	-
64	11/09/84	*	170	1090	712	7.4	64	-
65	11/10/84	#	-	-	830	8.0	36	-
65	11/10/84	*	77	983	741	7.2	58	-
66	11/11/84	#	-	-	718	6.8	61	-
66	11/11/84	*	87	891	681	6.9	62	-
66	11/11/84	#	-	-	512	-	-	-
67	11/12/84	#	-	-	656	6.5	69	-
67	11/12/84	*	160	1260	744	6.8	130	-
67	11/12/84	*	156	869	715	6.7	70	-
68	11/13/84	#	-	-	629	6.6	71	-
69	11/14/84	*	135	1090	707	7.0	98	-
69	11/14/84	#	-	-	710	6.6	100	-
70	11/15/84	*	157	1010	563	7.0	92	-

(continued)

TABLE D-30. (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
70	11/15/84	#	-	-	659	6.6	88	-
71	11/16/84	#	-	-	645	6.6	88	-
71	11/16/84	*	95	839	676	7.0	72	-
71	11/16/84	#	-	-	747	6.7	150	-
72	11/17/84	#	-	-	528	6.6	77	-
72	11/17/84	*	163	869	632	7.0	91	-
73	11/18/84	*	155	833	591	6.9	96	-
73	11/18/84	#	-	-	610	6.6	95	-
74	11/19/84	#	-	-	538	6.4	89	-
74	11/19/84	*	50	659	499	6.7	76	-
75	11/20/84	#	-	-	451	6.1	45	-
75	11/20/84	*	17	610	487	6.7	33	16
76	11/21/84	*	35	578	512	6.5	37	16
77	11/22/84	#	-	-	551	-	-	-
77	11/22/84	*	54	533	422	6.9	44	16
78	11/23/84	#	-	-	499	-	-	-
78	11/23/84	*	51	424	397	7.1	34	17
79	11/24/84	#	-	-	449	-	-	-
79	11/24/84	*	49	400	375	7.2	30	-
80	11/25/84	#	-	-	469	-	-	-
80	11/25/84	*	14	397	351	7.0	20	-
81	11/26/84	#	-	-	482	-	-	-
81	11/26/84	*	20	424	397	6.9	18	-
82	11/27/84	#	-	-	502	-	-	-
82	11/27/84	#	-	-	632	-	-	-
82	11/27/84	*	30	541	466	7.2	33	-
83	11/28/84	#	-	-	551	-	-	-
83	11/28/84	*	61	980	833	7.0	55	-
84	11/29/84	#	-	-	854	-	-	-

(continued)

TABLE D-30. (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
84	11/29/84	*	46	967	687	6.8	74	24.5
85	11/30/84	#	-	-	570	6.4	67	-
85	11/30/84	*	97	797	578	6.6	77	22.5
86	12/01/84	#	-	-	575	-	-	-
86	12/01/84	*	101	688	517	6.9	66	22.5
87	12/02/84	#	-	-	744	-	-	-
87	12/02/84	*	132	1080	684	7.5	76	-
88	12/03/84	#	-	-	707	6.8	-	-
88	12/03/84	*	114	1210	750	7.0	150	20.5
89	12/04/84	*	96	1130	761	6.9	160	-
89	12/04/84	#	-	-	767	-	-	19
89	12/04/84	#	-	-	761	-	-	-

*Indicates a composite sample (Sample Point M).
**Dashes indicate no data taken at that time.
***The TBOD for this sample was 34 mg/l.
#Indicates a grab sample (Sample Point M1).

TABLE D-31. ACTIVATED CARBON EFFLUENT ANALYTICAL DATA SUMMARY (SAMPLE POINTS M9 AND N)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
5	09/11/84	#	- **	-	-	95	-	-	-
5	09/11/84	*	62	-	151	150	8.4	26	-
19	09/25/84	*	21	10	163	88	7.6	29	26
20	09/26/84	#	-	-	-	60	-	-	-
20	09/26/84	#	-	-	-	71	-	-	-
20	09/26/84	*	20	-	144	112	8.0	9.5	21
21	09/27/84	#	-	-	-	123	-	-	-
21	09/27/84	*	128	41	427	134	7.9	42	-
22	09/28/84	#	-	-	-	53	-	-	-
22	09/28/84	*	103	-	257	177	7.8	40	21
23	09/29/84	#	-	-	-	175	-	-	-
23	09/29/84	*	51	-	168	148	8.3	28	24
24	09/30/84	#	-	-	-	146	-	-	-
24	09/30/84	*	76	-	192	102	7.8	35	22
25	10/01/84	#	-	-	-	123	-	-	-
25	10/01/84	*	61	-	172	93	7.7	37	23.5
26	10/02/84	#	-	-	-	214	-	-	-
26	10/02/84	*	29	-	277	261	7.5	36	21
27	10/03/84	#	-	-	-	212	-	-	-
27	10/03/84	*	64	19	316	192	7.4	30	23
28	10/04/84	#	-	-	-	232	-	-	-
28	10/04/84	*	76	18	243	236	7.7	32	26
29	10/05/84	#	-	-	-	354	-	-	-
29	10/05/84	*	72	-	436	251	7.7	42	25.5
30	10/06/84	#	-	-	-	121	-	-	-
30	10/06/84	*	84	-	378	371	7.7	59	25

(continued)

TABLE D-31 (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
31	10/07/84	#	-	-	412	-	-	62	-
31	10/07/84	*	83	35	375	281	7.8	55	25
32	10/08/84	#	86	44	580	302	-	-	-
32	10/08/84	*	104	-	375	288	7.7	59	27
32	10/08/84	*	101	-	351	277	7.7	59	27
33	10/09/84	#	-	-	-	371	-	60	-
33	10/09/84	#	-	-	-	412	-	60	-
33	10/09/84	*	48	-	284	238	7.7	31	28
34	10/10/84	#	-	-	-	512	7.4	31	28
34	10/10/84	*	49	32	243	142	7.5	38	26
35	10/11/84	#	-	-	-	192	7.2	69	27.5
35	10/11/84	*	116	-	459	321	7.5	64	26
36	10/12/84	#	-	-	-	298	7.2	53	26
48	10/24/84	*	20	-	181	71	8.4	8	-
49	10/25/84	#	-	-	-	68	7.7	7	-
49	10/25/84	*	31	21	123	98	7.0	26	26
50	10/26/84	#	-	-	-	108	-	-	-
50	10/26/84	*	37	-	170	64	7.1	37	28
51	10/27/84	#	-	-	-	81	6.9	45	-
51	10/27/84	*	73	-	166	75	7.1	60	28
52	10/28/84	#	-	-	-	146	6.9	85	-
52	10/28/84	*	145	20	676	185	6.9	230	-
53	10/29/84	#	-	-	-	247	6.6	245	-
53	10/29/84	*	214	-	897	115	6.8	220	-
54	10/30/84	#	-	-	-	102	6.4	210	-
54	10/30/84	*	8	20	479	127	6.8	170	-
55	10/31/84	#	-	-	-	119	6.6	93	-
55	10/31/84	*	102	-	330	144	6.9	83	-
56	11/01/84	#	-	-	-	133	6.9	56	-

(continued)

TABLE D-31. (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
56	11/01/84	*	157	-	214	148	7.1	65	25.5
57	11/02/84	#	-	-	-	127	6.8	55	-
57	11/02/84	*	83	-	208	123	7.2	47	-
58	11/03/84	#	-	-	-	93	7.1	32	-
58	11/03/84	*	26	-	190	106	7.6	42	-
59	11/04/84	#	-	-	-	110	7.2	28	-
59	11/04/84	*	25	-	175	144	7.3	30	-
60	11/05/84	#	-	-	-	184	6.9	30	-
60	11/05/84	*	60	100	155	70	7.0	44	-
61	11/06/84	#	-	-	-	216	6.6	51	-
61	11/06/84	*	108	-	551	254	6.9	81	-
62	11/07/84	#	-	-	-	250	6.6	200	-
62	11/07/84	*	130	-	551	305	6.8	155	-
63	11/08/84	#	-	-	-	216	6.4	160	-
63	11/08/84	*	190	-	610	302	6.7	160	-
64	11/09/84	#	-	-	-	234	6.5	100	-
64	11/09/84	*	150	99	546	279	6.9	90	-
65	11/10/84	#	-	-	-	397	6.9	57	-
65	11/10/84	*	77	-	449	284	7.2	78	-
66	11/11/84	#	-	-	-	241	6.9	73	-
66	11/11/84	*	85	44	424	347	7.0	75	-
67	11/12/84	#	-	-	-	212	6.7	70	-
67	11/12/84	*	108	-	407	247	7.0	81	-
68	11/13/84	#	-	-	-	245	6.8	75	-
68	11/13/84	*	103	-	499	229	6.9	150	-
69	11/14/84	#	-	-	-	330	6.6	165	-
69	11/14/84	*	90	-	665	354	7.1	170	-
70	11/15/84	#	-	-	-	387	6.6	100	-
70	11/15/84	*	300	78	621	373	6.9	170	-

(continued)

TABLE D-31 (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
71	11/16/84	#	-	-	-	356	6.7	170	-
71	11/16/84	*	96	-	538	286	7.0	82	-
72	11/17/84	#	-	-	-	236	6.7	72	-
72	11/17/84	*	130	-	523	293	7.0	98	-
73	11/18/84	#	-	-	-	316	6.7	99	-
73	11/18/84	*	145	-	562	293	7.1	100	-
74	11/19/84	#	-	-	-	402	6.7	92	-
74	11/19/84	*	36	43	366	284	6.9	73	-
75	11/20/84	#	-	-	-	247	6.6	46	-
75	11/20/84	*	21	-	360	250	6.9	34	16
76	11/21/84	#	-	-	-	278	-	-	-
76	11/21/84	*	28	-	279	212	6.6	35	16.5
77	11/22/84	#	-	-	-	259	6.4	-	-
77	11/22/84	*	40	-	263	259	6.9	40	16
78	11/23/84	#	-	-	-	351	-	-	-
78	11/23/84	*	41	30	254	192	7.2	35	17.5
79	11/24/84	#	-	-	-	295	-	-	-
79	11/24/84	*	39	-	277	265	7.4	28	-
80	11/25/84	#	-	-	-	316	-	-	-
80	11/25/84	*	5	-	247	192	7.4	18	-
81	11/26/84	#	-	-	-	261	-	-	-
81	11/26/84	*	23	20	218	216	7.4	18	-
82	11/27/84	#	-	-	-	275	-	-	-
82	11/27/84	*	27	-	259	254	7.3	33	-
83	11/28/84	#	-	-	-	328	-	-	-
83	11/28/84	*	52	150	549	466	7.0	46	-
84	11/29/84	#	-	-	-	523	-	-	-
84	11/29/84	*	40	-	715	449	6.8	71	23

(continued)

TABLE D-31 (continued)

DAY	DATE	SAMPLE TYPE	TSS, mg/l	TBOD, mg/l	TCOD, mg/l	SCOD, mg/l	pH, UNITS	TURB, NTU	TEMP, °C
85	11/30/84	#	-	-	-	422	6.5	67	-
85	11/30/84	*	68	-	607	489	6.5	88	22.5
86	12/01/84	#	-	-	-	387	-	-	-
86	12/01/84	*	66	170	499	387	7.1	78	23
87	12/02/84	#	-	-	-	305	-	-	-
87	12/02/84	*	91	-	655	330	7.0	87	-
88	12/03/84	#	-	-	-	385	6.8	-	-
88	12/03/84	*	106	260	848	461	6.9	160	19
89	12/04/84	*	119	130	842	499	6.9	170	16
89	12/04/84	#	-	-	-	484	-	-	-
89	12/04/84	#	-	-	-	525	-	-	-

*Indicates a composite sample (Sample Point N).
**Dashes indicate no data taken at that time.
#Indicates a grab sample (Sample Point M9).

TABLE D-32. TBOD REMOVAL ACROSS THE GAC SYSTEM

Parameter		TBOD, mg/l		
Day	Date	INF*	EFF**	% REM
19	09/25/84	21	10	52
21	09/27/84	>110	41	>63
27	10/03/84	39	19	51
28	10/04/84	29	18	38
31	10/07/84	76	35	54
32	10/08/84	51	44	14
34	10/10/84	81	32	61
49	10/25/84	71	>21	<70
52	10/28/84	280	>20	<93
54	10/30/84	130	>20	<85
60	11/05/84	150	100	50
64	11/09/84	130	99	24
66	11/11/84	48	44	8
70	11/15/84	79	78	1
74	11/19/84	33	43	-#
78	11/23/84	26	30	-
81	11/26/84	20	20	0
83	11/28/84	260	150	42
86	12/01/84	160	170	-
88	12/03/84	200	260	-
89	12/04/84	100	130	-
AVERAGE		>100	>66	34 (21)***

*Sample Point "L"
**Sample Point "N"
For GAC Run NO. 1 (09/11-10/12) TBOD removal was >52 percent (7).
For GAC Run No. 2 (10/24-12/04) TBOD removal was <30 percent (14).
***( ) Indicates number of samples used to obtain average.
#Indicates a zero or negative removal.

TABLE D-33 ACTIVATED CARBON COLUMN PRESSURE DROP

		Carbon Column No.					
Day	Date	Inf	1-Eff	2-Eff	3-Eff	4-Eff	Note
19	09/25/84	15.5	14.5	12	9.5	9.0	
19	09/25/84	27	26.5	27	24.5	25	
20	09/26/84	28	25.5	24	20	21.5	
21	09/27/84	46	35	29	20.5	20.5	
22	09/28/84	46	38	31	22	21	
23	09/29/84	52	40	30	19	16	
23	09/29/84	6	7	6	4	5	After Backwash
24	09/30/84	25	22	19	14	6	
25	10/01/84	52	37	29	17	4	
25	10/01/84	12	13	12	10	11	After Backwash
26	10/02/84	20	16	14.5	10	9	
27	10/03/84	37	25	20	13	9	
28	10/04/84	51	35	25	15	8	
28	10/04/84	9	9	10	7	9	After Backwash
29	10/05/84	16	12.5	11	7	9	
30	10/06/84	30	19	14	9	8	
31	10/07/84	40	25	18	12	9	
32	10/08/84	52	30	20	13	8	
32	10/08/84	8	8	9	6	8	After Backwash
33	10/09/84	15	13	9	5	8	
34	10/10/84	29	19	10	5	7	
35	10/11/84	44	26	15	9	10	
36	10/12/84	51	29	15	10	14	
49	10/25/84	20	20	20	20	-*	
50	10/26/84	26	26	26	23	-	
51	10/27/84	24	23	22.5	22	-	
52	10/28/84	26	26	24.5	23.5	-	
53	10/29/84	29	28	28	27	-	
56	11/01/84	29.5	28.5	29	28	-	
57	11/02/84	26	25.5	26	24	-	
58	11/03/84	30	29	30	28	-	
60	11/05/84	31	29	30.5	28	-	
61	11/06/84	35	34	35	33	-	
62	11/07/84	38	36	37	35	-	
63	11/08/84	39.5	38	38.5	36.5	-	
64	11/09/84	39.5	38	38.5	37	-	
66	11/11/84	41	40	40	39	-	
67	11/12/84	40.5	39.5	40	38	-	
68	11/13/84	40.5	40	40	38.5	-	
69	11/14/84	40.5	40	40	38	-	

(continued)

TABLE D-33. (continued)

		Carbon Column No.					
Day	Date	Inf	1-Eff	2-Eff	3-Eff	4-Eff	Note
70	11/15/84	40	38.5	39.5	37.5	-	
71	11/16/84	40	40	40	38.5	-	
72	11/17/84	41	39	39.5	38	-	
73	11/18/84	41	40	40.5	38.5	-	
74	11/19/84	41	39.5	40.5	38.5	-	
75	11/20/84	30	29	28	28	-	
76	11/21/84	40	39	38	36	-	
77	11/22/84	40	39	36	36	-	
78	11/23/84	40	39	36	36	-	
79	11/24/84	40	39	36	36	-	
81	11/26/84	40	39	36	36	-	
82	11/27/84	40	39	36	36	-	
83	11/28/84	40	39	36	36	-	
84	11/29/84	40	39	36	36	-	
85	11/30/84	40	39	36	36	-	
86	12/04/84	40	39	36	36	-	
88	12/03/84	11.5	10	10.5	8	-	
89	12/04/84	11	9.5	10.5	8	-	

NOTE: (1) Days 19-36 above represent data taken during Run No. 1 mode of operation was series downflow.

(2) Days 49-89 above represent data taken during Run No. 2. Mode of operation was series upflow. Due to piping modifications made to run upflow, no pressure data could be recorded for the fourth column effluent.

(3) All values are in psi.

(4) psi x 0.07 = kg/cm^2

* No data taken.

TABLE D-34. ACTIVATED CARBON ANALYTICAL DATA COMPARISON FOR SELECTED PARAMETERS - RUN NO. 1

Parameter Day	Date	TSS,mg/1 INF	EFF	% REM	ph, Units INF	EFF	Turbidity, NTU INF	EFF	Temperature, °C INF	EFF
5	09/11/84	177	62	65	7.7	8.4	29	26	-*	-
19	09/25/84	88	21	76	7.9	7.6	28	29	29	26
20	09/26/84	115	20	83	7.8	8.0	29	9.5	24	21
21	09/27/84	348	128	63	7.9	7.9	65	42	-	-
22	09/28/84	217	103	53	7.8	7.8	58	40	22	21
23	09/29/84	204	51	75	7.7	8.3	56	28	25	24
24	09/30/84	218	76	65	7.7	7.8	49	35	24	22
25	10/01/84	148	61	59	7.6	7.7	47	37	23.5	23.5
26	10/02/84	100	29	71	7.4	7.5	67	36	21	21
27	10/03/84	190	64	66	7.2	7.4	45	30	23	23
28	10/04/84	136	76	44	7.3	7.7	34	32	27	26
29	10/05/84	145	72	50	7.3	7.7	51	42	27.5	25.5
30	10/06/84	167	84	50	7.7	7.7	59	59	26.5	25
31	10/07/84	180	83	54	7.7	7.8	57	55	27	25
32	10/08/84	147	104	29	7.6	7.7	52	59	28	27
33	10/09/84	93	48	48	7.5	7.7	38	31	29	28
34	10/10/84	195	49	75	7.5	7.5	52	38	27.5	26
35	10/11/84	200	116	42	7.5	7.5	61	64	28	26
Average		170	69	59(18)**	7.2-7.9(18)	7.4-8.4(18)	28-67(18)	9.5-64(18)	21-29(18)	21-28(18)

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*Dashes indicate no data taken at that time.

**( ) indicates number of samples used to obtain average or range.

TABLE D-35. ACTIVATED CARBON ANALYTICAL DATA COMPARISON FOR SELECTED PARAMETERS - RUN NO. 2

Parameter Day	Date	TSS, mg/l INF	TSS, mg/l EFF	TSS, mg/l % REM	pH, Units INF	pH, Units EFF	Turbidity, NTU INF	Turbidity, NTU EFF	Temperature, °C INF	Temperature, °C EFF
48	10/24/84	14	20	#	6.8	8.4	20	8	-***	-
49	10/25/84	88	31	65	7.1	7.0	40	26	-	26
50	10/26/84	43	37	14	7.2	7.1	35	37	-	28
51	10/27/84	63	73	#	7.1	7.1	49	60	-	28
52	10/28/84	163	145	11	6.9	6.9	215	230	28	-
53	10/29/84	145	214	#	7.1	6.8	220	220	-	-
54	10/30/84	138	8	94	7.1	6.8	93	170	-	-
55	10/31/84	94	102	#	7.1	6.9	66	83	-	-
56	11/01/84	-	157	-	6.6	7.1	55	65	-	25.5
57	11/02/84	77	83	#	7.0	7.2	45	47	-	-
58	11/03/84	38	26	32	6.9	7.6	38	42	-	-
59	11/04/84	36	25	31	6.8	7.3	30	30	-	-
60	11/05/84	95	60	37	6.9	7.0	44	44	-	-
61	11/06/84	130	108	17	7.0	6.9	81	81	-	-
62	11/07/84	143	130	9	6.9	6.8	149	155	18	-
63	11/08/84	164	190	#	6.7	6.7	100	160	17.5	-
64	11/09/84	170	150	12	7.4	6.9	64	90	-	-
65	11/10/84	77	77	0	7.2	7.2	58	78	-	-
66	11/11/84	87	85	2	6.9	7.0	62	75	-	-
67	11/12/84	160	108	33	6.8	7.0	130	81	-	-
69	11/14/84	135	90	33	7.0	7.1	98	170	-	-
70	11/15/84	157	300	#	7.0	6.9	92	170	-	-

(continued)

TABLE D-35. (continued)

Parameter Day	Date	TSS,mg/1 INF	TSS,mg/1 EFF	% REM	pH, Units INF	pH, Units EFF	Turbidity, NTU INF	Turbidity, NTU EFF	Temperature, °C INF	Temperature, °C EFF
71	11/16/84	95	96	#	7.0	7.0	72	82	-	-
72	11/17/84	163	130	20	7.0	7.0	91	98	-	-
73	11/18/84	155	145	6	6.9	7.1	96	100	-	-
74	11/19/84	50	36	28	6.7	6.9	76	73	-	-
75	11/20/84	17	21	#	6.7	6.9	33	34	16	16
76	11/21/84	35	28	20	6.5	6.6	37	35	16	16.5
77	11/22/84	54	40	26	6.9	6.9	44	40	16	16
78	11/23/84	51	41	20	7.1	7.2	34	35	17	17.5
79	11/24/84	49	39	20	7.2	7.4	30	28	-	-
80	11/25/84	14	5	64	7.0	7.4	20	18	-	-
81	11/26/84	20	23	#	6.9	7.4	18	18	-	-
82	11/27/84	30	27	10	7.2	7.3	33	33	-	-
83	11/28/84	61	52	15	7.0	7.0	55	46	-	-
84	11/29/84	46	40	13	6.8	6.8	74	71	24.5	23
85	11/30/84	97	68	30	6.6	6.5	77	88	22.5	22.5
86	12/01/84	101	66	35	6.9	7.1	66	78	22.5	23
88	12/03/84	114	106	7	7.0	6.9	150	160	20.5	19
89	12/04/84	96	119	#	6.9	6.9	160	170	-	16
Average*		87**	75**	14	6.5-7.4	6.7-8.4	18-220	8-230	16-24.5	16-23
		(38)##	(38)		(40)	(40)	(40)	(40)	(8)	(8)

*Data included in the average are only those values in which influent and effluent results were available.

**11/15/84 data point omitted from average.

***Dashes indicate no data taken at that time.

#Percent removal not calculated if negative.

##( ) Indicates number of samples used to obtain average or range.

APPENDIX E

MICROSCOPIC MICROBIOLOGICAL REPORT FOR BTS-1, BTS-2 and BTS-3

INTRODUCTION

Samples were taken from each of the pilot plant units on November 29, 1984 for examination of the microbiology of each system. Samples obtained were:

ID No.	Sample Description
452A	BTS-1 Cell 3 - Mixed liquor
452B	BTS-1 Clarifier - Viscous floating mixed liquor solids (VFMLS)
453A	BTS-2 Cell 3 - Mixed liquor
453B	BTS-2 Cell 3 - Viscous floating mixed liquor solids (VFMLS)
453C	BTS-2 Clarifier - Viscous floating mixed liquor solids (VFMLS)
454	BTS-3 Cell 3 - Mixed liquor

Samples were iced and sent by overnight air freight to David Jenkins and Associates Inc., Kensington, California for microscopic microbiological examination. The objectives of this examination were (1) to identify the microorganisms in each unit, (2) determine the difference, if any, between the microbiology of the units containing the viscous floating mixed liquor solids (BTS-1 and BTS-2) and the control unit and (3) determine the difference, if any, between the microbiology of the mixed liquor and the VFMLS in BTS-1 and BTS-2. The report of this examination follows.

DAVID JENKINS AND ASSOCIATES INC.
11 YALE CIRCLE
KENSINGTON
CALIFORNIA 94708

(415) 527.0872

DAVID JENKINS, PRESIDENT

December 4th 1984

Mr. Richard Osantowski
Enviroenergy Technology Center
Rexnord Inc.
5103 W. Beloit Road
Milwaukee
Wisconsin 53214

Dear Mr. Osantowski,

The microscopic microbiological analyses of the 6 samples taken 11/29/84 are enclosed and a Summary Table of filamentous organism analyses is presented (Table 1). As discussed telephonically on 12/4/84 the following points can be made:

1. For units 1 and 2 there was no fractionation in either total filamentous organism abundance or relative individual filamentous organism abundance between MLSS and float or foam samples.

2. There was no evidence of extracellular polymeric material by India Ink reverse staining. This material when present in large amounts can result in "sticky" foam and "slimy" mixed liquor.

3. Overall filamentous organism abundance in all mixed liquors was sufficient to cause severe impairment of settling (bulking) by floc bridging (Units 1 and 2) and by floc bridging and open floc structure (Unit 3). Unit 2 was the "worst".

4. Units 1 and 2 were quite similar in filamentous organism types; a difference in relative abundance of filamentous organism types existed between these Units and Unit 3.

5. Type 021N has been associated with nutrient (N and P) deficiency (not in this case based on its morphological appearance and N and P data provided by you); and with well-mixed, continuous-fed activated sludge treating soluble organics (? particularly fatty acids). This may be a possibility in your case since although your units have 3 compartments they have long hydraulic detention times which will allow significant influent dispersion.

6. *H. hydrossis* is not a very good "indicator" filamentous organism; if anything it occurs at low F/M under mild DO deficiency.

7. *Thiothrix* II when growing without sulfur granules (as here) is likely caused by the same conditions that cause type 021N (since we believe they are closely related).

8. *N. limicola* II is again a low F/M, completely mixed aeration basin, soluble waste filamentous organism tyoe. Our survey of over 400 plants suggests that this filamentous organism may be associated with the presence of simple sugars - we see it in pulp/paper, fruit/vegetable wastes etc.

9. *M. parvicella* is again a low F/M type; it has been shown to use oleic acid as a substrate and seems to be more prevalent in winter (low temperature) than summer. It is most probably an actinomycete and can cause foam like *Nocardia*; this is not likely in your case because no concentration of *M. parvicella* in the foam/float sample over the ML samples was observed.

10. We have seen type 021N in large amounts associated with a float problem in one case in a pulp and paper waste lagoon although it was caused by nutrient deficiency and some polysaccharide-derived scum might also have been present.

There is certainly a filamentous bulking problem in your plants that will likely have a great impact on design of a plant to meet BAT. Whether or not the filamentous organisms also are related to the foam/float is not proven by this analysis. However, I imagine if you got the filamentous organisms under control you would also reduce the foaming problem.

We have controlled the major causative filamentous organism (type 021N) and other low F/M types in other wastes by the use of "selectors" - small basins (aerobic or anoxic) where waste and RAS mix prior to entering the main aeration basin. The example at a mixed domestic industrial waste treatment plant (Hamilton, Ohio) is enclosed. This approach might be worth trying.

Filamentous organism control by chlorination would only work on your systems if Cl_2 is added into the aeration basin (not the RAS). In long aeration time systems, RAS Cl_2 addition does not provide high enough exposure frequency of mixed liquor inventory to the Cl_2. This has been done on a plant scale at 2 petrochemical and one brewery waste plant. One of the petrochemical waste plants contained some waste carbon, however the effects of Carbon on this technique has not been assessed. It may be that the Carbon is so well coated with biomass that it will not reduce too much of the Cl_2, It should be worth a try.

If you need further assistance, please do not hesitate to write or call.

Microphotographs will follow when ready. The charge for the analyses, letter report and photos is $115/sample for a total of $690.00. Please make payable to David Jenkins and Associates Inc.

Respectfully submitted,

Yours sincerely,

David Jenkins
Professor of Sanitary Engineering

Encls.
DJ/jaj

No. 5452 A Sample Rexnord Unit No 1/Cell No. 3 MLSS

Sample Date 11 /29/84 Observation Date 12/ 3/84

Filament Abundance ☐ 0 None ☐ 1 Few ☐ 2 Some ☐ 3 Common ☐ 4 Very Common ☒ 5 Abundant ☐ 6 Excessive

Filament Effect on Floc Structure: ☐ Little or None ☒ Bridging ☐ Open Floc Structure

Morphology of Floc: ☒ Firm ☒ Round, Compact

☐ Weak ☐ Irregular, Diffuse

Size (μm)

<150	150-500	>500
20	70	10

% 25 - >1000 μm dia.

Features: Free cells in suspension ______

Zoogloea's ______

Spirochaetes ______

X [✓ Inorg]/Org. Particles Carbon particle

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella	4	COMMON
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	1	Abundant	Type 0803		
Thiothrix sp. II	3	COMMON	Type 1851		
Type 0041			Type 0961		
H. hydrossis	2	Abundant	Other		
N. Limicola			Other		

x = Dominant

0 = Secondary

Remarks NO excess polysaccharide by India ink negative staining.

No. 452 A Sam

COMMENTS: No excess polysaccharide by India ink reverse staining.

Protozoa: attached ciliates
Metazoa: nematodes
Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	−	−	−	− −	
Motility	−	−	−		
Filament Shape	Curved	Straight Bent	SMOOTHLY-CURVED	COILED	
Color	Medium	Medium	Medium	Dark	
Location	Ext. f/floc	Free Ext. f/floc	Ext. f/floc	in floc	
Attached Unicells	−	−	−	−	
Sheath	−	+	+	−	
Crosswalls	+	−	+	−	
Filament Diam. um	1.4-2.2	0.5	0.8	0.8	
Length	100-7500	20-120	50-150	50-100	
Cell Shape	Barrels OVALS	−	rectangles	− −	
Size	1.4-2.2 x 1-1.5	−	0.8 x 1.5		
Sulfur deposits	= in situ S test	−	= in situ S test	−	
Other granules	+	−	+	+	
Commonness	Abundant	Abundant	COMMON	COMMON	
Rank	1	2	3	4	
Stains, 1000X	−	−	−	+	
Gram					
Neisser	−, + granules	−	−, + granules	−, + granules	
I.D.	Type 021N	Haliscomenobacter hydrossis	Thiothrix sp. II	Microthrix parvicella	

No. 5452 B Sample Rexnord Unit No 1 - Clarifier Floated Scum

Sample Date 11/29/24 Observation Date 12/3/84

Filament Abundance ☐ 0 None ☐ 1 Few ☐ 2 Some ☐ 3 Common ☐ 4 Very Common ☒ 5 Abundant ☐ 6 Excessive

FOAM SAMPLE

Filament Effect on Floc Structure: ☐ Little or None ☐ Bridging ☐ Open Floc Structu

Morphology of Floc: ☐ Firm ☐ Weak ☐ Round, Compact ☐ Irregular, Diffuse

Size (μm) ☐ <150 ☐ 150-500 ☐ >500 %

Features: Free cells in suspension ____

Zoogloea's ____

Spirochaetes ____

[✓ Inorg]/Org. Particles carbon

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella	4	COMMON
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	1	Abundant	Type 0803		
Thiothrix sp. II	3	COMMON	Type 1851		
Type 0041			Type 0961		
H. hydrossis	2	Abundant	Other		
N. Limicola			Other		

x = Dominant

0 = Secondary

Remarks ____

No. 452 B

COMMENTS: No excess polysaccharide by India ink staining.

Protozoa: attached ciliates

Metazoa: nematodes

Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	−	−	−	−	
Motility	−	−	−	−	
Filament Shape	SMOOTHLY-CURVED	Straight Bent	SMOOTHLY-CURVED	COILED	
Color	Medium	Medium	Medium	Medium	
Location	ext. f/floc	Free Ext. f/Floc	Ext. f/floc	In floc	
Attached Unicells	−	−	−	−	
Sheath	−	+	+	−	
Crosswalls	+	−	+	−	
Filament Diam.	1.4-2.0	0.5	0.8	0.8	
Length	100->500	20-150	40-120	40-120	
Cell Shape	Barrels OVALS	−	Rectangles	−	
Size	1.4-2.0 x 1-1.5	−	0.8 x 1.5	−	
Sulfur deposits	−	−	−	−	
Other granules	+	−	+/−	+	
Commonness	Abundant	Abundant	COMMON	Common	
Rank	1	2	3	4	
Stains, 1000X	−	−	−	+	
Gram					
Neisser	−	−	−	−, +granules	
I.D.	Type 021N	Haliscomenobacter hydrossis	Thiothrix sp. II	Microthrix parvicella	

No. S453 A Sample Rexnord Unit No. 2/Cell No. 3 MLSS

Sample Date 11/29/84 Observation Date 12/3/84

Filament Abundance ☐ 0 None ☐ 1 Few ☐ 2 Some ☐ 3 Common ☐ 4 Very Common ☒ 5 Abundant ☒ 6 Excessive

Filament Effect on Floc Structure: ☐ Little or None ☒ Bridging ☐ Open Floc Structur

Morphology of Floc: ☒ Firm ☒ Round, Compact

☐ Weak ☒ Irregular, Diffuse

Size (µm)

<150	150-500	>500
60	40	

%

25-300 µm dia.

Features: Free cells in suspension ______

Zoogloea's ______

Spirochaetes ______

[✓ Inorg]/Org. Particles carbon

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella	4	some
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	1	Excessive	Type 0803		
Thiothrix sp.			Type 1851		
Type 0041			Type 0961		
H. hydrossis	2	COMMON	Other		
N. Limicola II	3	Some	Other		

x = Dominant

0 = Secondary

Remarks ______

No. S453A Sam

COMMENTS: no excess polysaccharide by India Ink negative staining

Protozoa: attached ciliates
Metazoa: rotifers
Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	–	–	–	–	
Motility	–	–	–	–	
Filament Shape	SMOOTHLY-CURVED	Straight Bent	COILED	COILED	
Color	Medium	Medium	Medium in Floc	Medium	
Location	Extend from Floc	Ext f/floc Free	free	in floc	
Attached Unicells	–	–	–	–	
Sheath	–	+	–	–	
Crosswalls	+	–	+	–	
Filament Diam.	1.2-2.4	0.5	1.2-1.4	0.8	
Length	100-7500	20-100	100-150	40-100	
Cell Shape	Barrels OVALS	–	Discs OVALS	–	
Size	1.2-2.4 x 1-2	–	1.2-1.4 x 0.5	–	
Sulfur deposits	– in situ – stest	–	–	–	
Other granules	+	–	+	+	
Commonness	Excessive	Common	Some	Some	
Rank	1	2	3	4	
Stains, 1000X	–	–	+/-	+	
Gram					
Neisser	–, + granules	–	+, weak	–, + granules	
I.D.	Type 021N	Haliscomenobacter hydrossis	Nostocoida limicola II	Microthrix parvicella	

No. 3453 B Sample Rexnord Unit No. 2/Cell No. 3 FOAM

Sample Date 11/29/84 Observation Date 12/3/84

Filament Abundance

☐ 0 None ☐ 1 Few ☐ 2 Some ☐ 3 Common ☐ 4 Very Common ☐ 5 Abundant ☒ 6 Excessive

FOAM Sample

Filament Effect on Floc Structure: ☐ Little or None ☐ Bridging ☐ Open Floc Structu

Morphology of Floc: ☐ Firm ☐ Round, Compact

☐ Weak ☐ Irregular, Diffuse

Size (µm)

<150	150-500	>500

%

Features: Free cells in suspension ____

Zoogloea's ____

Spirochaetes ____

[✓ Inorg]/Org. Particles Carbon

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella	4	Some
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	1	excessive	Type 0803		
Thiothrix sp.			Type 1851		
Type 0041			Type 0961		
H. hydrossis	2	COMMON	Other		
N. Limicola II	3	Some	Other		

x = Dominant

0 = Secondary

Remarks

No. 453 B Sa-

COMMENTS: No exass polysaccharide by India ink negative staining.

Protozoa:

Metazoa:

Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	–	–	–	–	
Motility	–	–	–	–	
Filament Shape	SMOOTHLY-CURVED	Straight Bent	COILED	COILED	
Color	Medium	Medium	Medium	Medium	
Location	Ext.f/floc	Free Ext.f/floc	in Floc Free	in floc	
Attached Unicells	–	–	–	–	
Sheath	–	+	–	–	
Crosswalls	+	–	+	–	
Filament Diam.	1.2-2.4	0.5	1.2-1.4	0.8	
Length	100 ->500	20-100	100-200	40-150	
Cell Shape	Barrels OVALS	–	Discs OVALS	–	
Size	1.2-2.4x1-2	–	1.2-1.4x0.5	–	
Sulfur deposits	–	–	–	–	
Other granules	+	–	+	+	
Commonness	Excessive	COMMON	Some	Some	
Rank	1	2	3	4	
Stains, 1000X					
Gram	–	–	+/–	+	
Neisser	–, + granules	–	+, weak	–, + granules	
I.D.	Type 021N	*Haliscomenobacter hydrossis*	*Nostocoida limicola* II	*Microthrix parvicella*	

No. 8453C Sample Rexnord Unit No.2 - Clarifier Floated Scum

Sample Date 11/29/84 Observation Date 12/3/84

Filament Abundance

☐	☐	☐	☐	☐	☐	☒
0 None	1 Few	2 Some	3 Common	4 Very Common	5 Abundant	6 Excessive

FOAM sample

Filament Effect on Floc Structure: ☐ Little or None ☐ Bridging ☐ Open Floc Structur

Morphology of Floc: ☐ Firm ☐ Round, Compact

☐ Weak ☐ Irregular, Diffuse

Size (µm)

<150	150-500	>500
%		

Features: Free cells in suspension ____

Zoogloea's ____

Spirochaetes ____

[✓ Inorg]/Org. Particles carbon

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella	4	some
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	1	Excessive	Type 0803		
Thiothrix sp.			Type 1851		
Type 0041			Type 0961		
H. hydrossis	2	Common	Other		
N. Limicola II	3	some	Other		

x = Dominant

0 = Secondary

Remarks

No. 453 C Sam

COMMENTS: No excess polysaccharide by India ink negative staining.

Protozoa:

Metazoa:

Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	–	–	–	–	
Motility	–	–	–	–	
Filament Shape	Smoothly-curved	Straight Bent	Coiled	Coiled	
Color	Medium	Medium	Medium	Medium	
Location	Ext-F/floc	Ext-F/Flc Free	in Floc Free	in floc	
Attached Unicells	–	–	–	–	
Sheath	–	+	–	–	
Crosswalls	+	–	+	–	
Filament Diam.	1.2-20	0.5	1.2-1.4	0.8	
Length	100 - 7500	20-120	100-150	20-100	
Cell Shape	Barrels Ovals	–	Discs Ovals	–	
Size	1.2-2.0 X 1.2	–	1.2-1.4 X 0.5	–	
Sulfur deposits	–	–	–	–	
Other granules	+	–	+	+	
Commonness	Excessive	Common	some	Some	
Rank	1	2	3	4	
Stains, 1000X					
Gram	–	–	+/-	+	
Neisser	-, + granules	–	+, weak	-, + granules	
I.D.	Type 021N	Haliscomenobacter hydrossis	Nostocoida limicola	Microthrix parvicella	

No: $454 Sample Rexnord Unit No 3 (control) MLSS

Sample Date 11/29/84 Observation Date 12/3/84

Filament Abundance ☐ 0 None ☐ 1 Few ☐ 2 Some ☐ 3 Common ☐ 4 Very Common ☒ 5 Abundant ☐ 6 Excessive

Filament Effect on Floc Structure: ☐ Little or None ☒ Bridging ☒ Open Floc Structu

Morphology of Floc: ☒ Firm ☐ Round, Compact

☐ Weak ☒ Irregular, Diffuse

Size (µm)

<150	150-500	>500
60	40	

% 25-200 um dia.

Features: Free cells in suspension ____

Zoogloea's ____

Spirochaetes ____

Inorg/Org. Particles ____

FILAMENTOUS MICROORGANISM SUMMARY:

	Rank	Abundance		Rank	Abundance
Nocardia sp.			M. parvicella		
Type 1701			Type 0581		
S. natans			Type 0092		
Type 021N	4	Few	Type 0803		
Thiothrix sp. II	3	Some	Type 1851		
Type 0041			Type 0961		
H. hydrossis	1	Abundant	Other		
N. Limicola II	2	Very Common	Other		

x = Dominant

0 = Secondary

Remarks ____

No. 454 Sa

COMMENTS: no excess polysaccharide by IndiA ink negative staining.

Protozoa:

Metazoa:

Wet Mount, 1000X, Phase Contrast

Filament #	A	B	C	D	E
Branching	–	–	–	–	
Motility	–	–	–	–	
Filament Shape	straight Bent	COILED	straight	SMOOTHLY-CURVED	
Color	Medium	Medium	Medium	Medium	
Location	Free Ext.f/floc	Ext.f/floc in Floc	Ext.f/floc	Ext.f/floc	
Attached Unicells	–	–	–	–	
Sheath	+	–	+	–	
Crosswalls	–	+	+	+	
Filament Diam.	0.5	1.2-1.6	0.8	1.2-1.6	
Length	20-150	100-7500	40-100	>500	
Cell Shape	–	Discs	rectangles	OVALS Barrels	
Size	–	1.2-1.6x0.5	0.8x1-1.5	1.2-1.6x1.5	
Sulfur deposits	–	–	– in situ – S test	–	
Other granules	–	+	–	–	
Commonness	Abundant	VERY COMMON	Some	Few	
Rank	1	2	3	4	
Stains, 1000X					
Gram	–	+/–	–	–	
Neisser	–	+	–	–	
I.D.	Haliscomenobacter hydrossis	Nostocoida limicolA II	Thiothrix Sp. II	Type 021N	

APPENDIX F

TOTAL ION CHROMATOGRAMS AND MASS SPECTRA OF EFFLUENT SAMPLES

Samples of effluent from the full-scale plant and the pilot plant were obtained in March and October 1984 for identification of specific organic compounds remaining after biological treatment. The samples were extracted by EPA Method 625 and the extract analyzed by GC/MS by Environmental Science and Engineering of Gainesville, Florida and the EPA laboratory, Athens, GA. Copies of the total ion chromatograms and the mass spectra of each peak are included in this appendix. The "peak height" scales used in these figures are in dimensionless units.

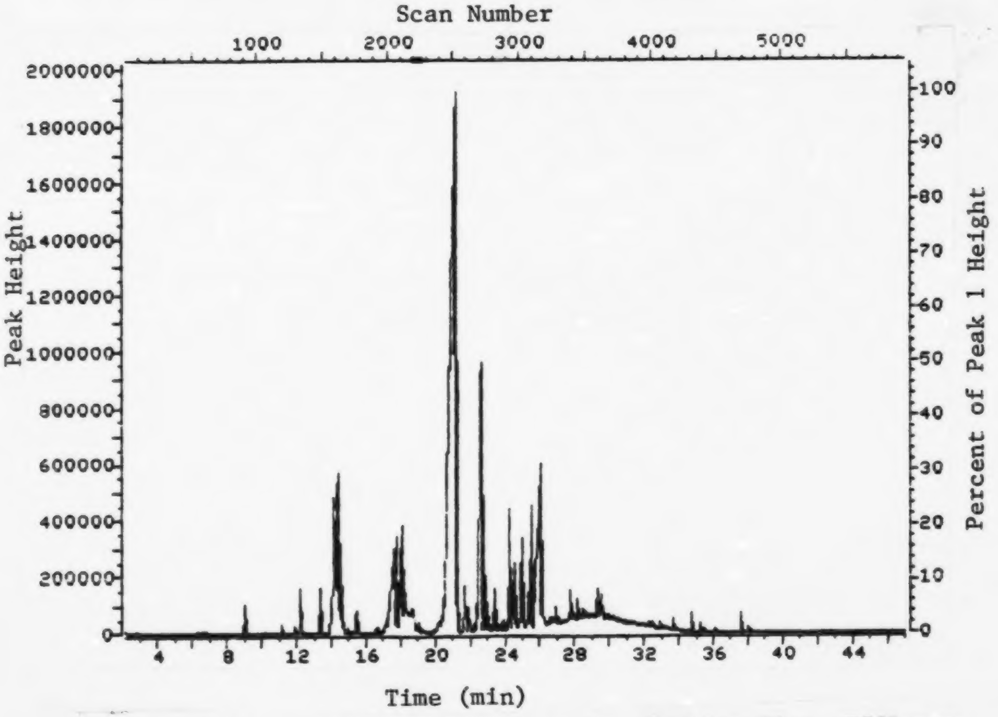


Figure F-1. Total Ion Chromatogram of Pilot Plant Effluent.

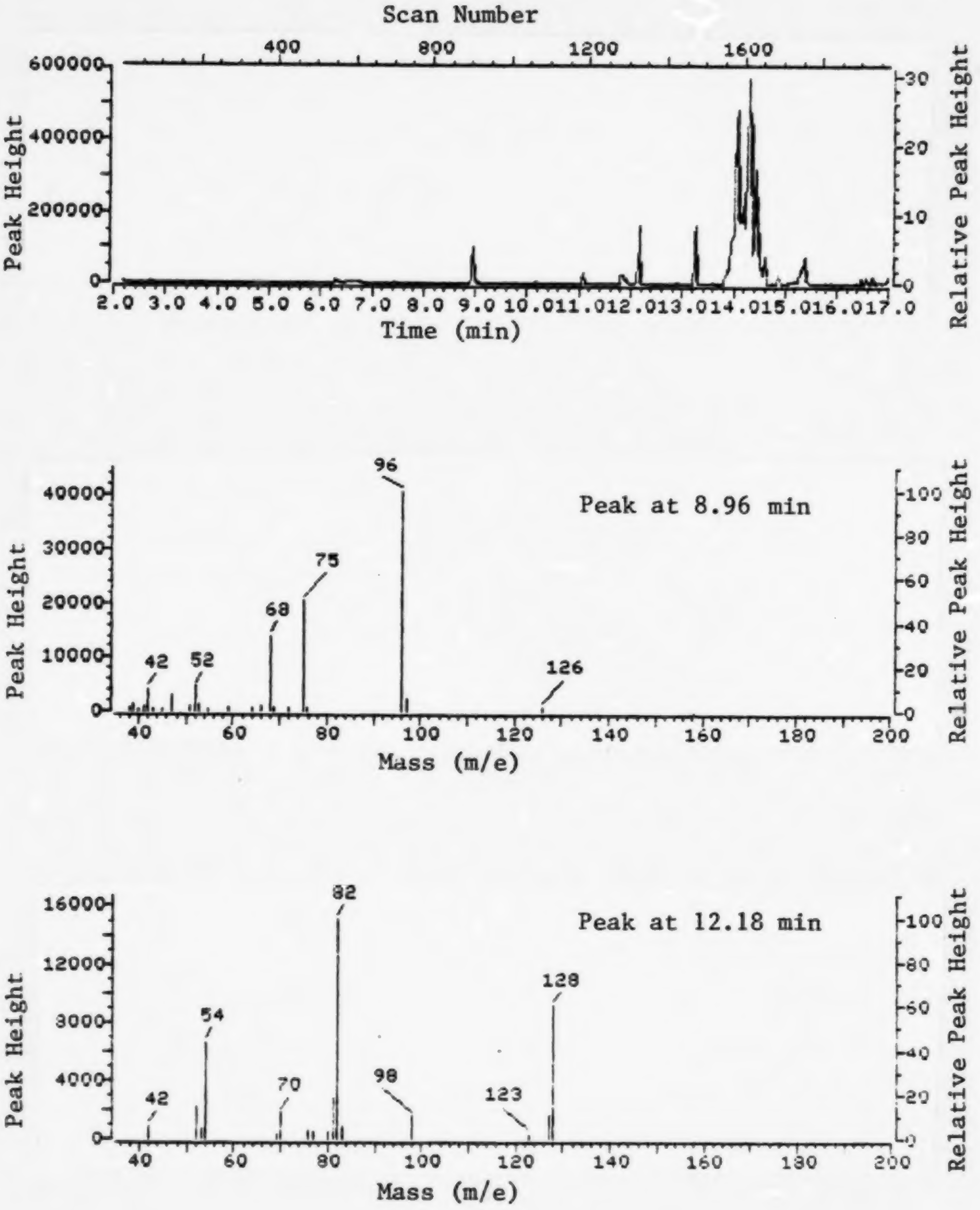


Figure F-2. Ion Chromatogram of Pilot Plant Effluent (2.0 to 17.0 minutes) and Mass Spectra for Peaks at 8.96 and 12.18 minutes.

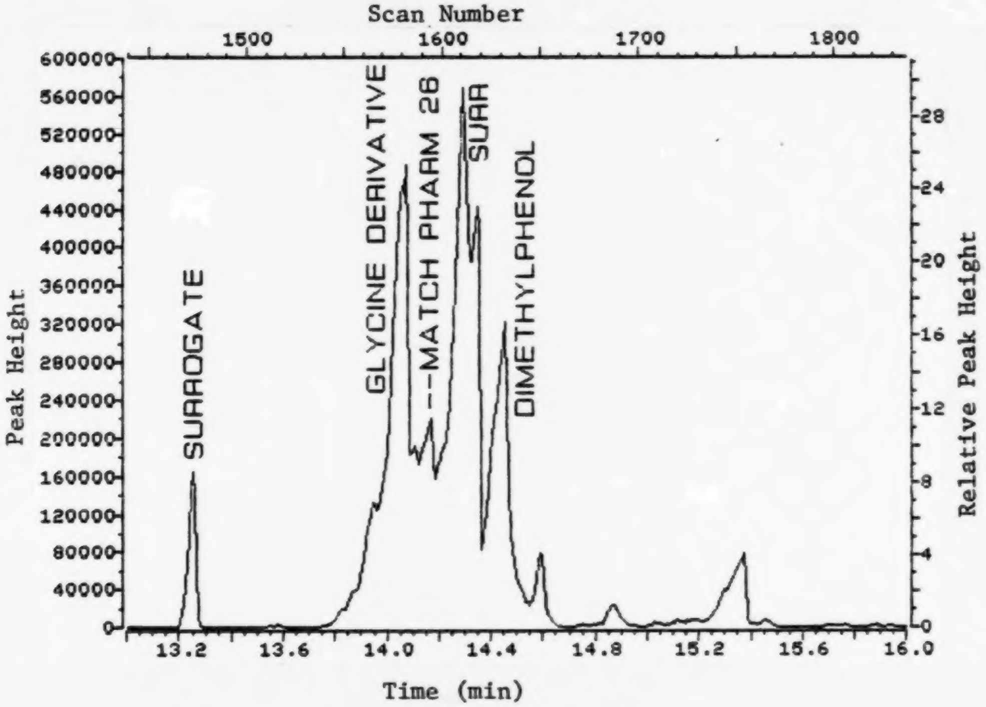
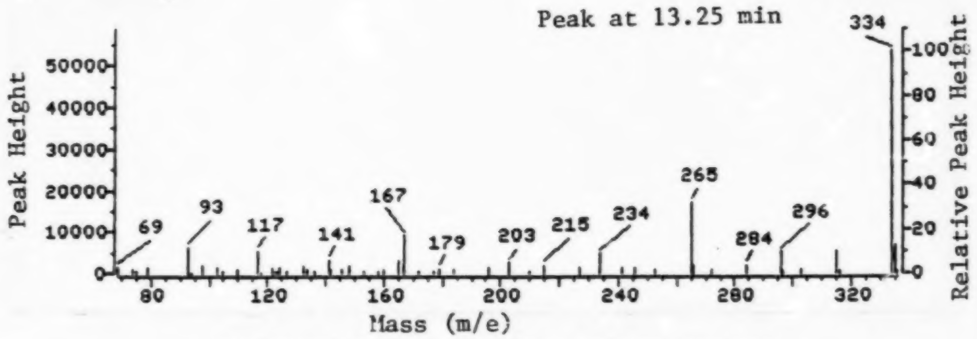


Figure F-3. Ion Chromatogram of Pilot Plant Effluent (13.2 to 16.0 minutes).



SURROGATE DECAFLUOROBIPHENYL

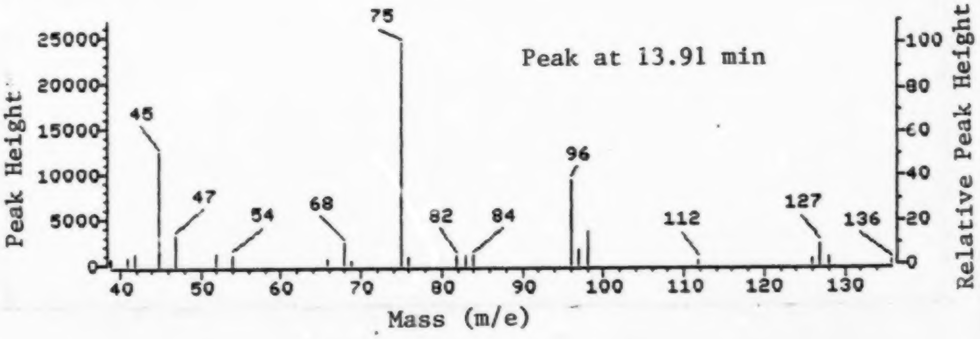


Figure F-4. Mass Spectra for Peaks at 13.25 and 13.91 minutes (Pilot Plant Effluent).

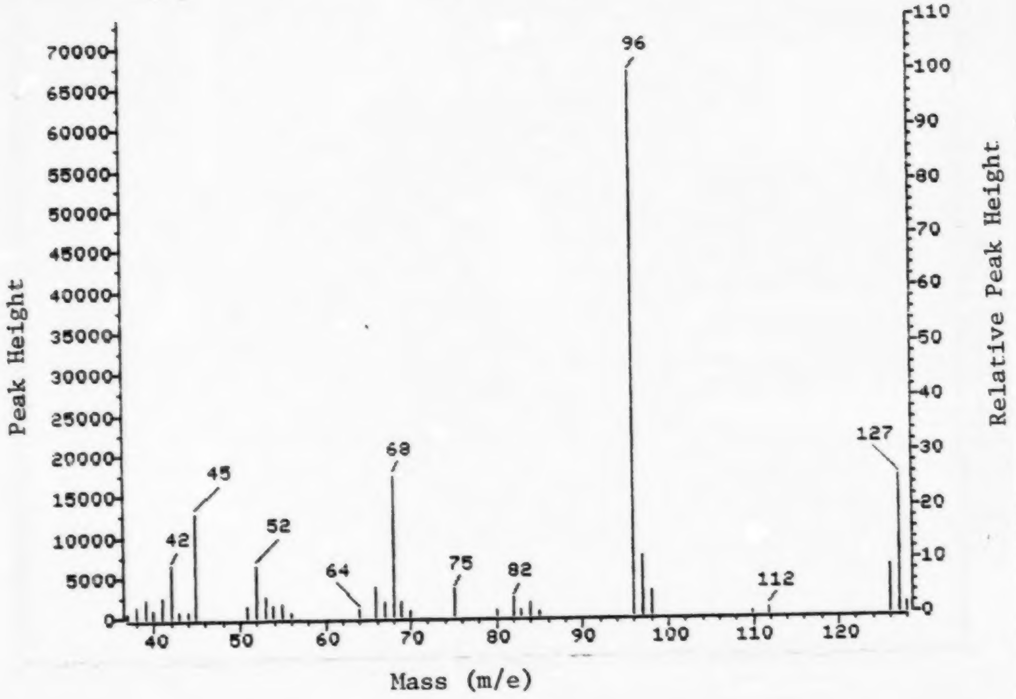


Figure F-5. Mass Spectra of Peak at 14.13 minutes (Pilot Plant Effluent).

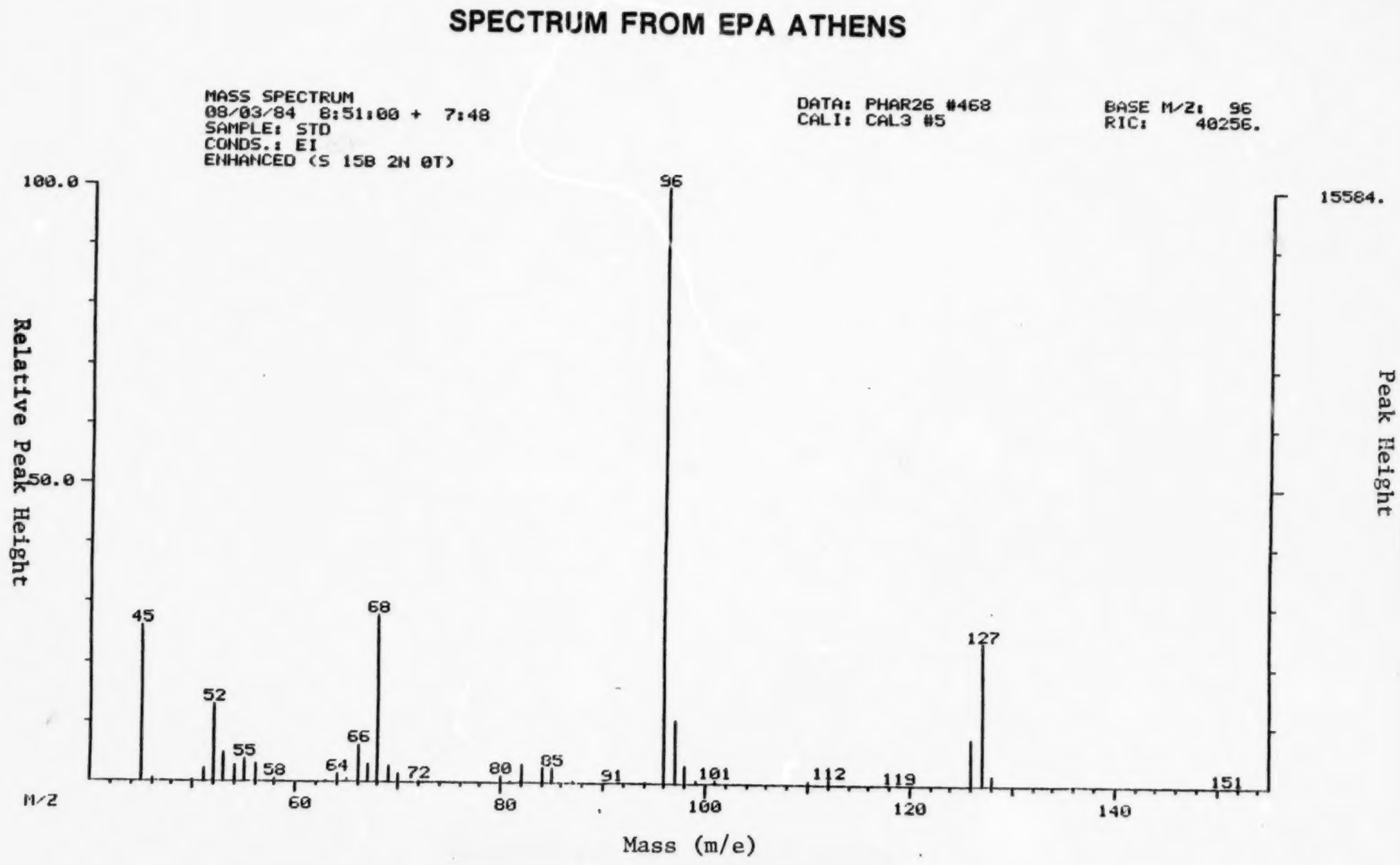
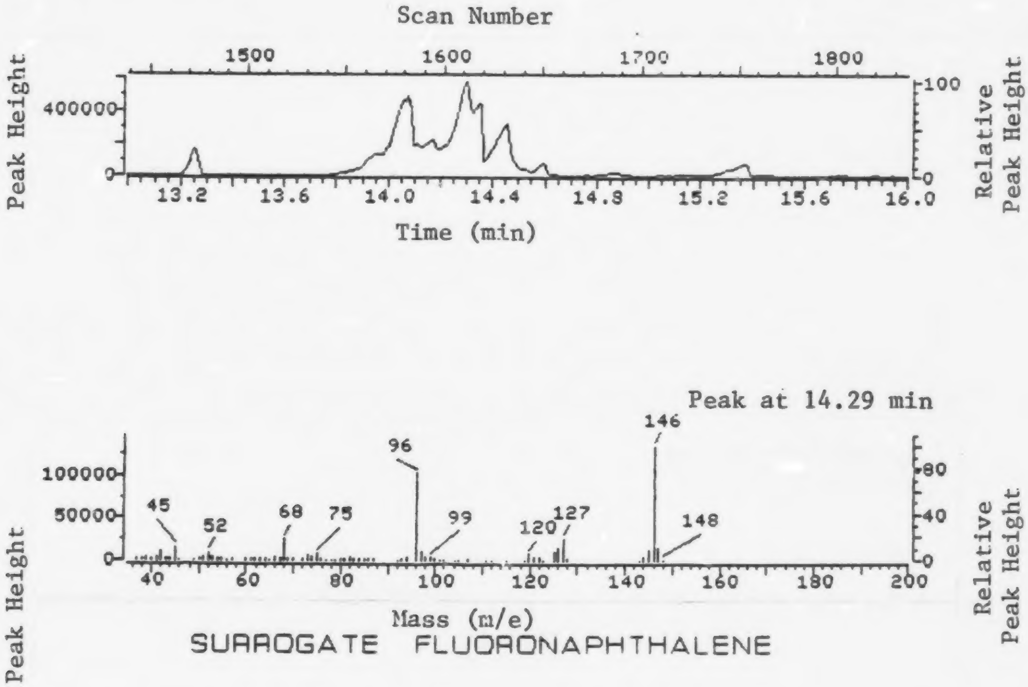
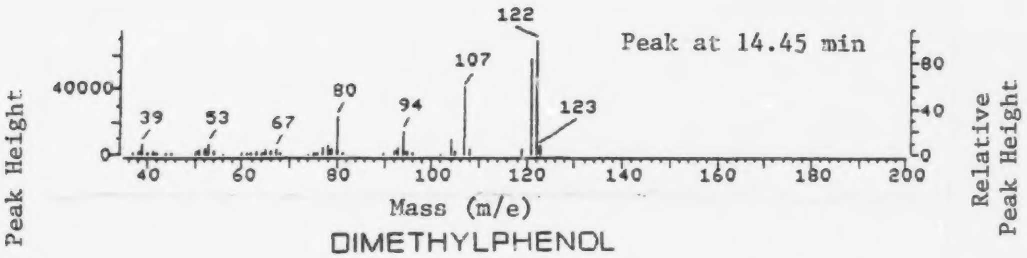


Figure F-6. Mass Spectra from EPA Athens (Full-Scale Plant Effluent).



SURROGATE FLUORONAPHTHALENE



DIMETHYLPHENOL

Figure F-7. Ion Chromatogram of Pilot Plant Effluent (13 to 16 min) and Peak Mass Spectra. Peaks at 14.29 and 14.45 minutes.

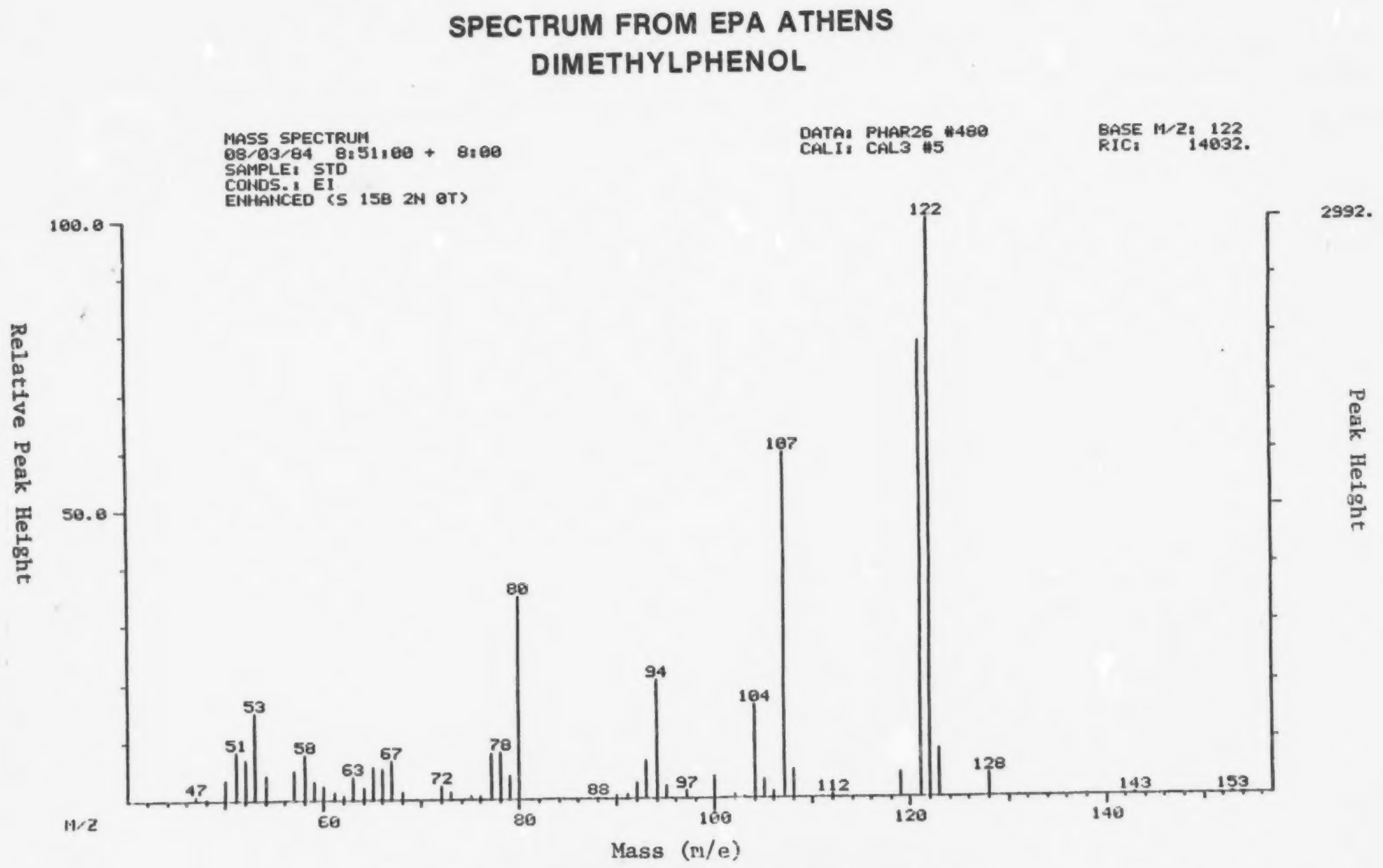


Figure F-8. Peak Mass Spectra - Dimethylphenol.

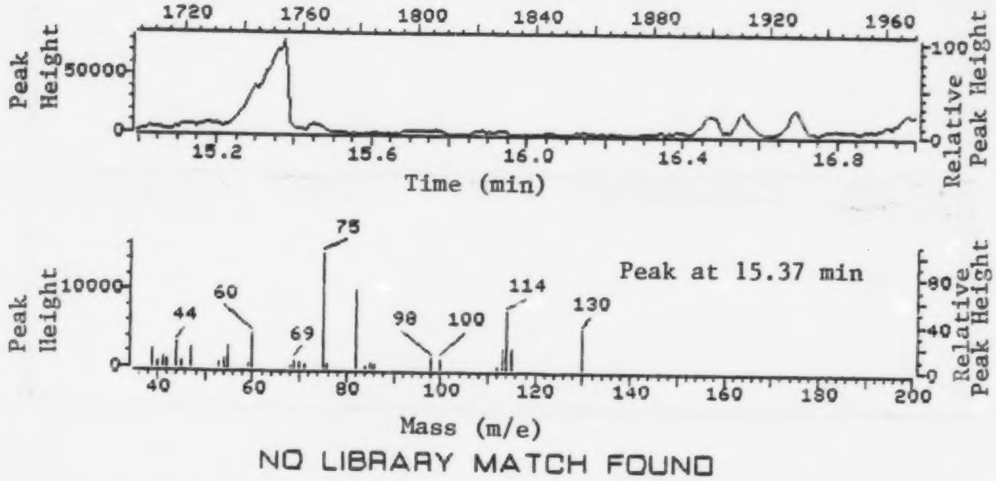


Figure F-9. Ion Chromatogram of Pilot Plant Effluent (15 to 17 min) and Peak Mass Spectra of Peak at 15.37 minutes.

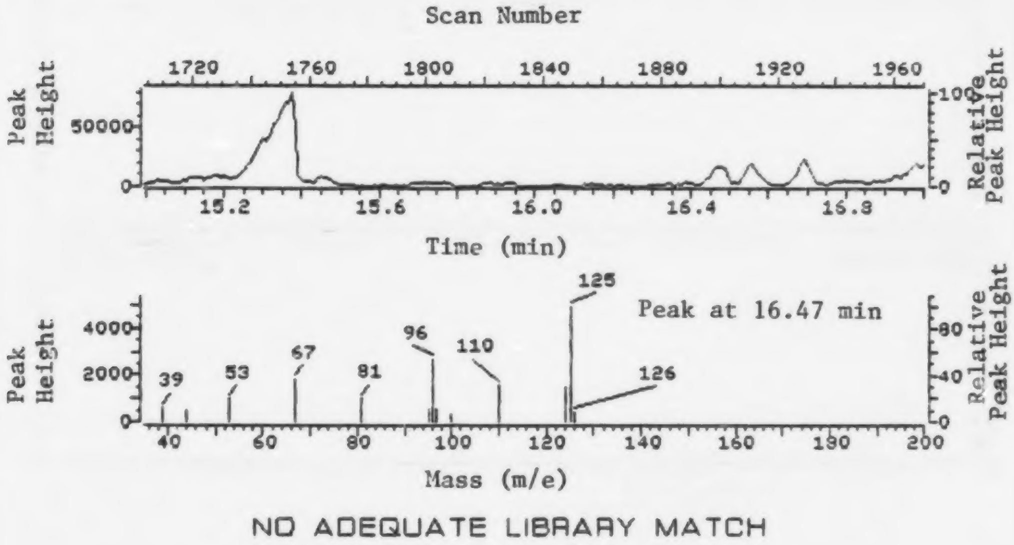


Figure F-10. Ion Chromatogram of Pilot Plant Effluent (15 to 17 min) and Peak Mass Spectra of Peak at 16.47 minutes.

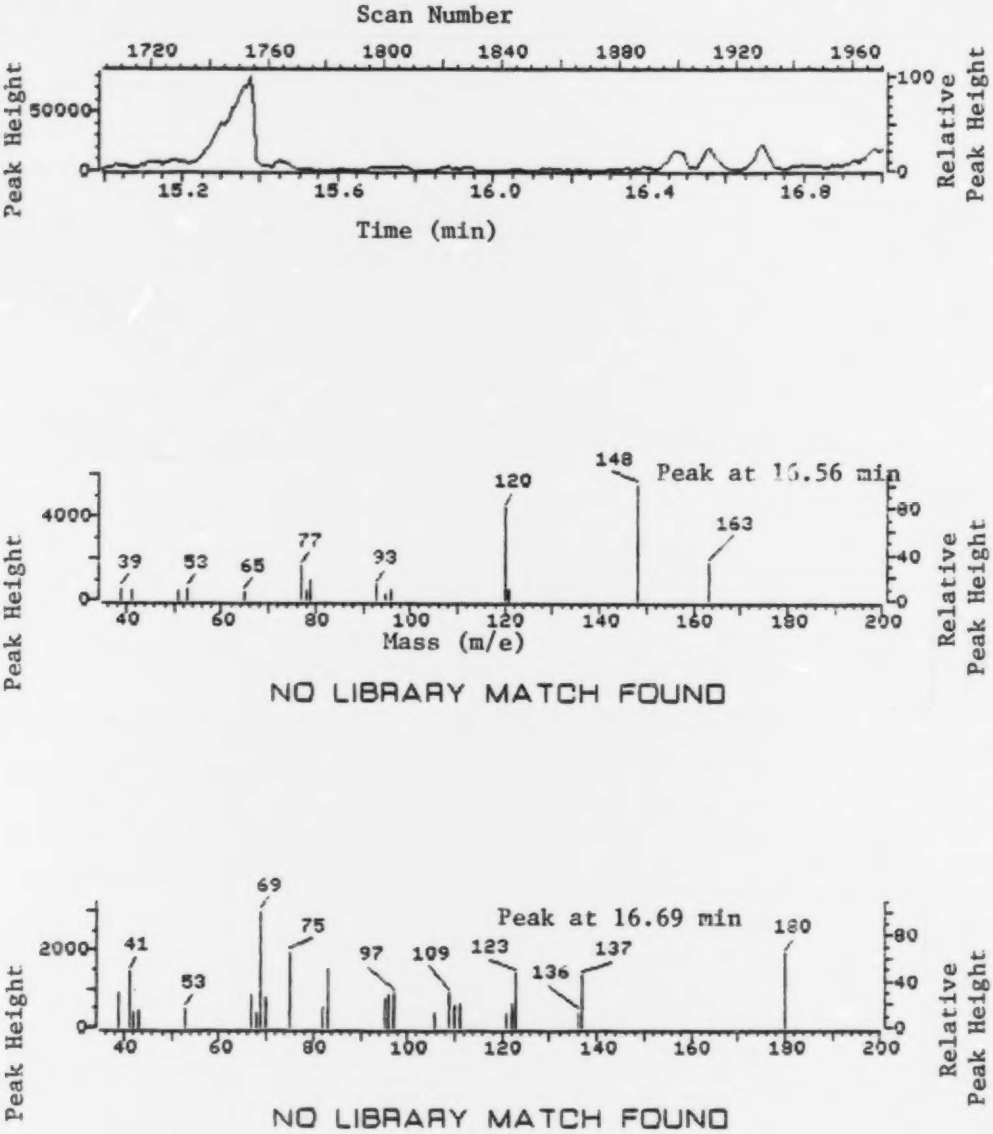


Figure F-11. Ion Chromatogram of Pilot Plant Effluent (15 to 17 min) and Peak Mass Spectra of Peaks at 16.56 and 16.69 minutes.

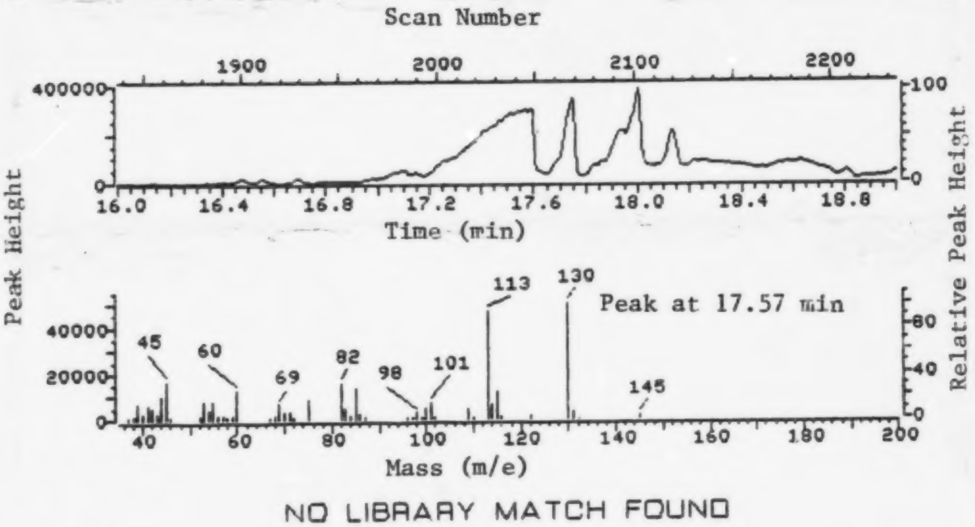


Figure F-12. Ion Chromatogram of Pilot Plant Effluent (16 to 19 min) and Peak Mass Spectra of Peak at 17.57 minutes.

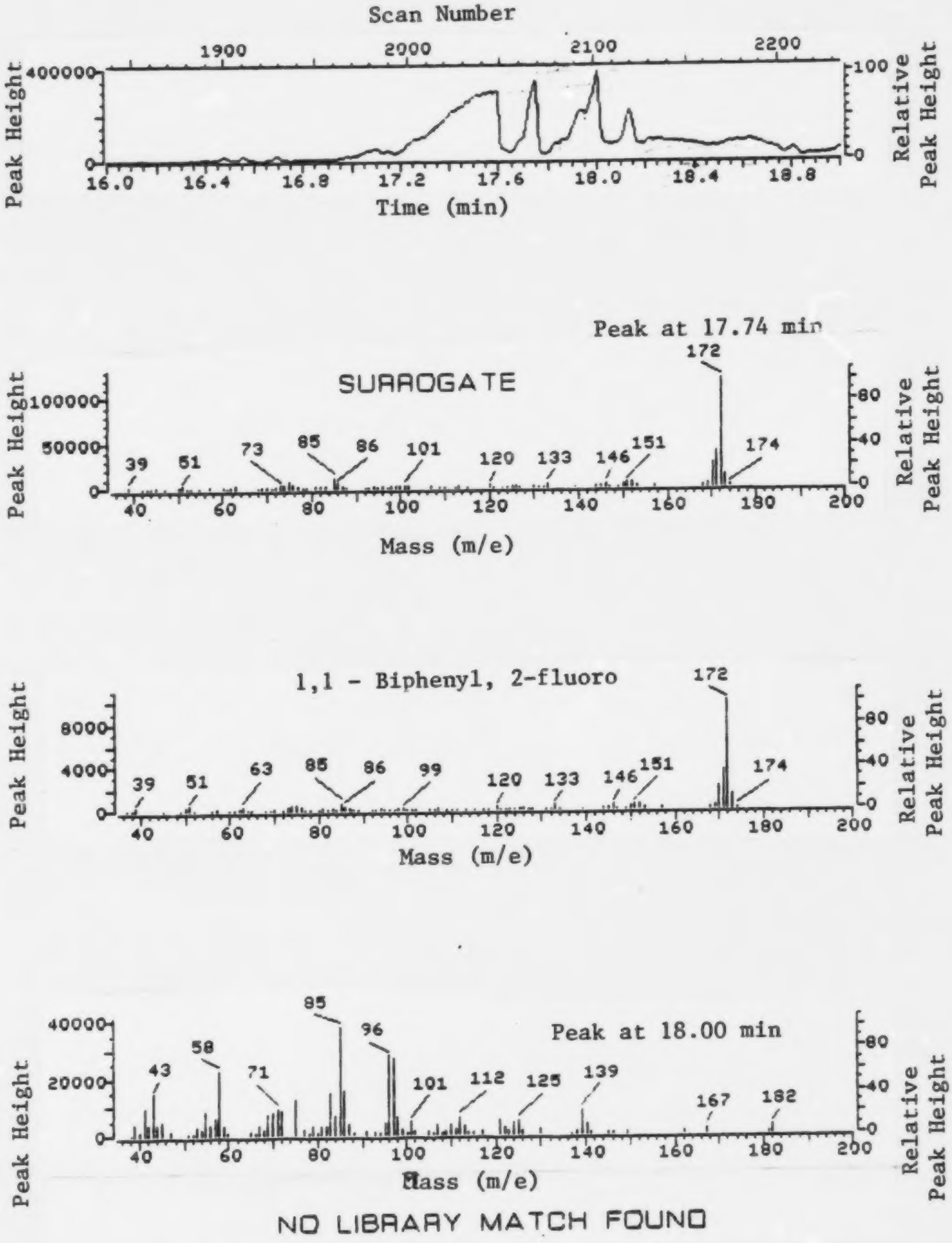


Figure F-13. Ion Chromatogram of Pilot Plant Effluent (16 to 19 min) and Peak Mass Spectra of Peaks at 17.74 and 18.00 minutes.

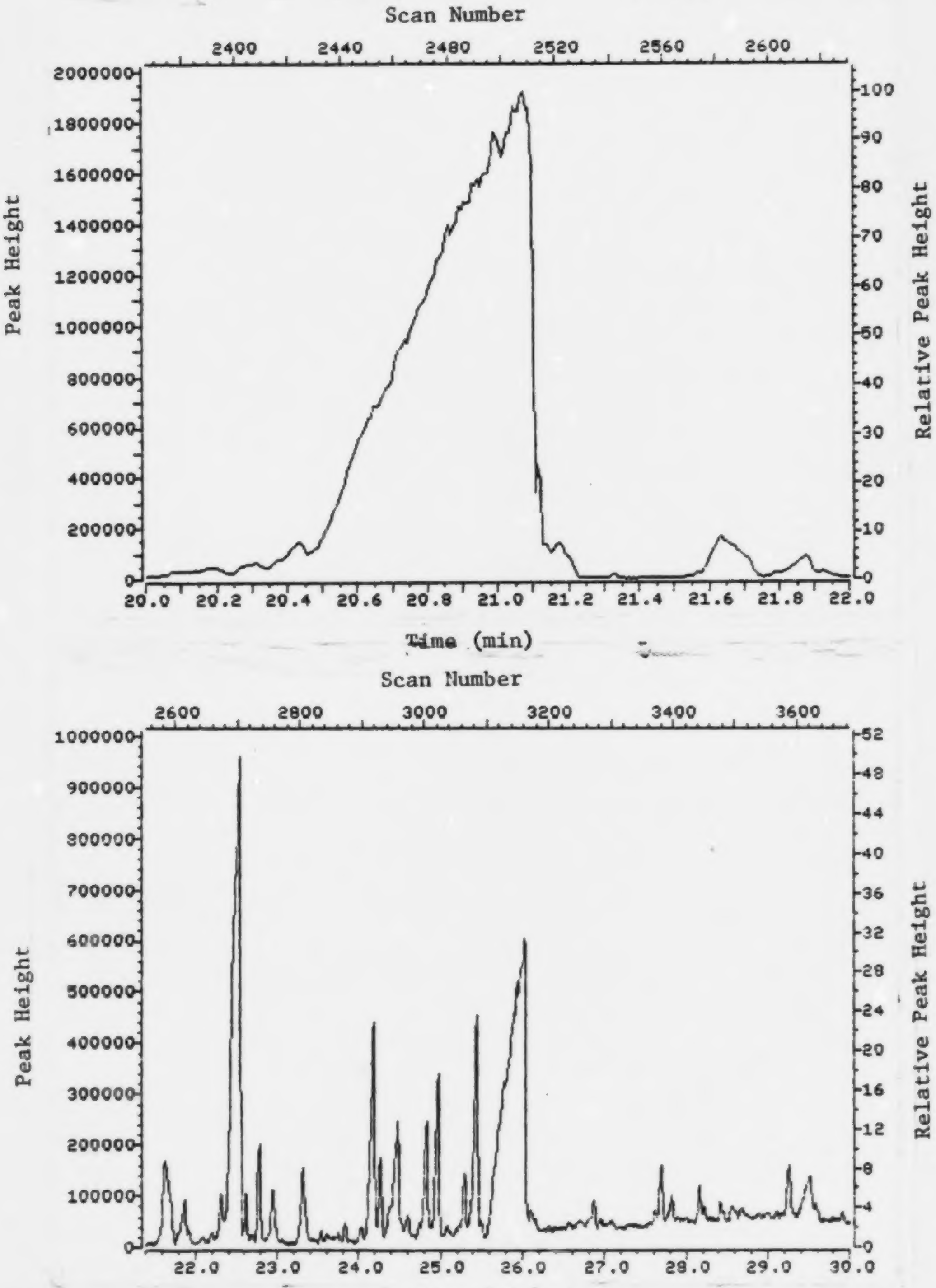


Figure F-14. Ion Chromatogram of Pilot Plant Effluent (20 to 30 min).

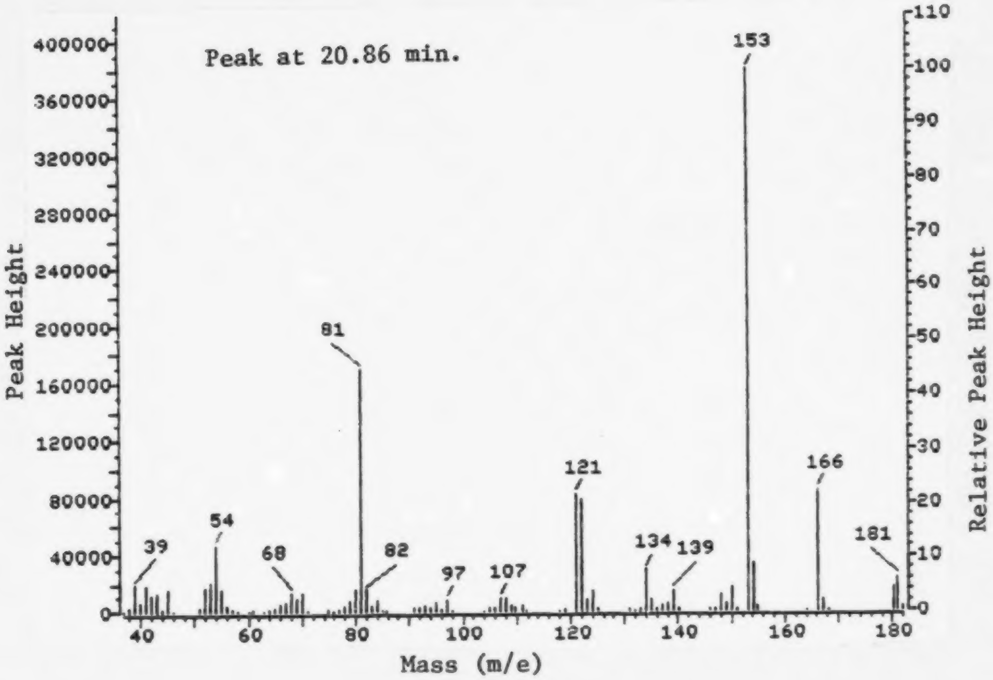


Figure F-15. Peak Mass Spectra of Peak at 20.86 minutes (Pilot Plant Effluent).

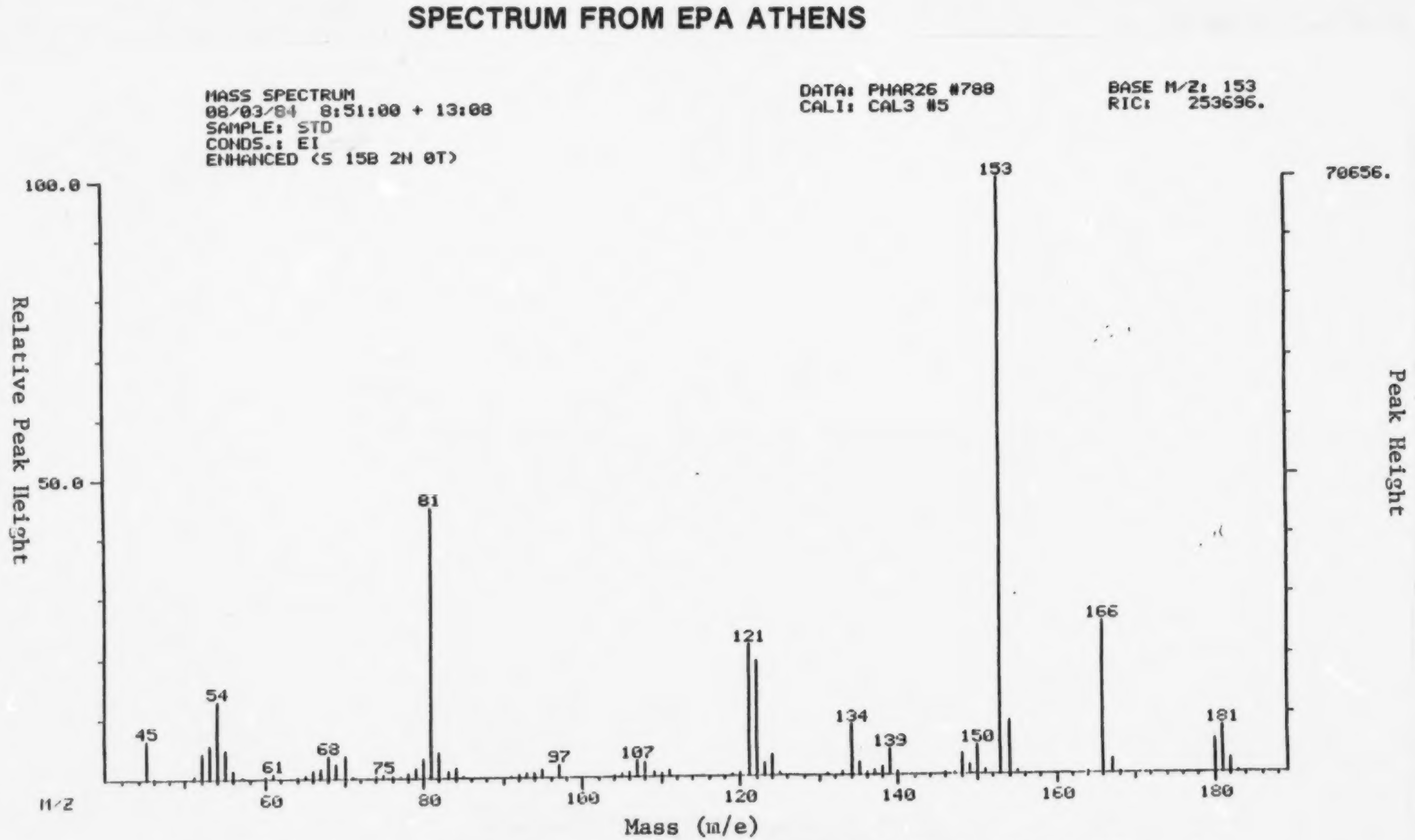
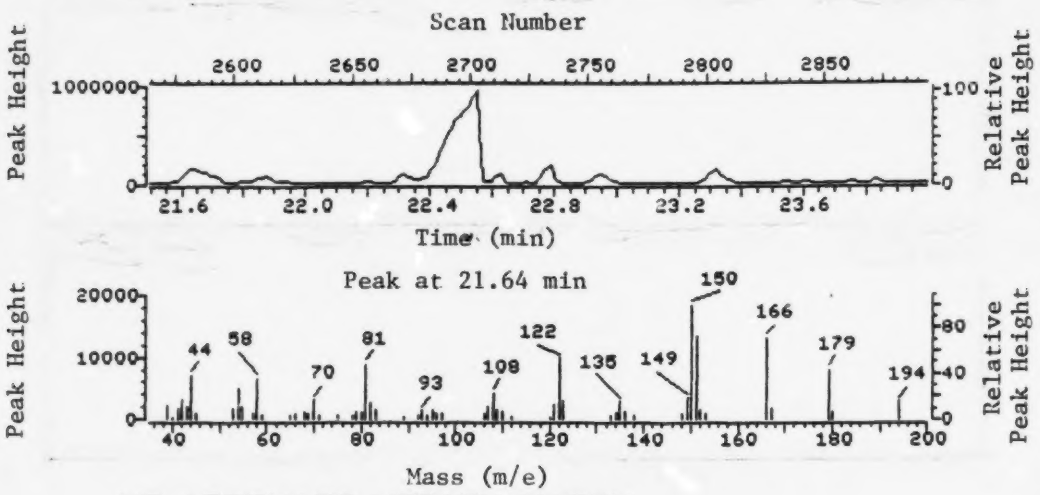
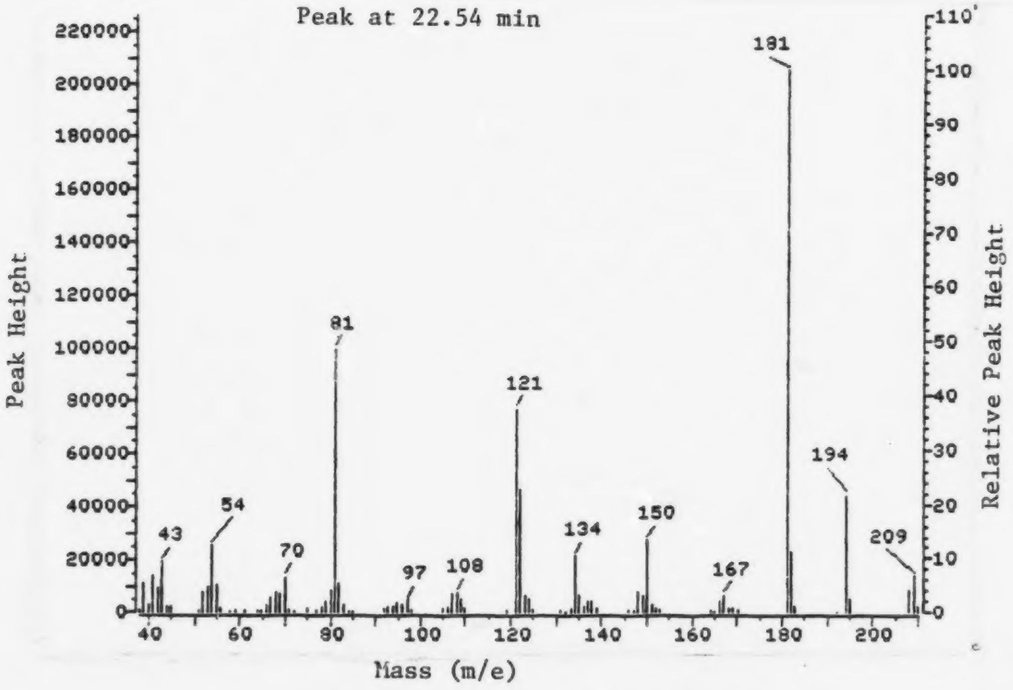


Figure F-16. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).



NO ADEQUATE LIBRARY MATCH

Figure F-17. Ion Chromatogram of Pilot Plant Effluent (21.6 min to 24 min) and Peak Mass Spectra of Peak at 21.64 minutes.



NO LIBRARY MATCH FOUND

Figure F-18. Peak Mass Spectra of Peak at 22.54 minutes (Pilot Plant Effluent).

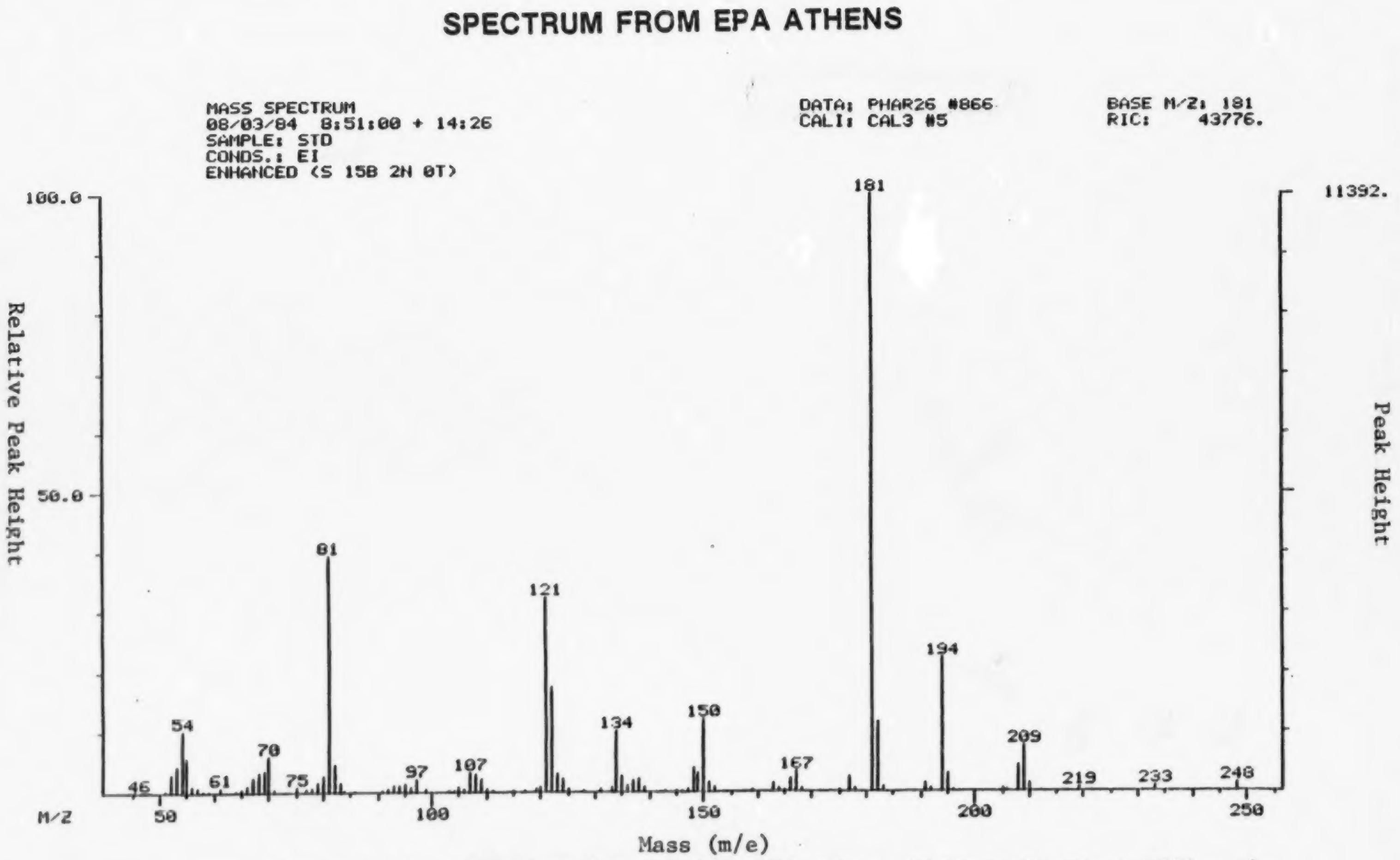


Figure F-19. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).

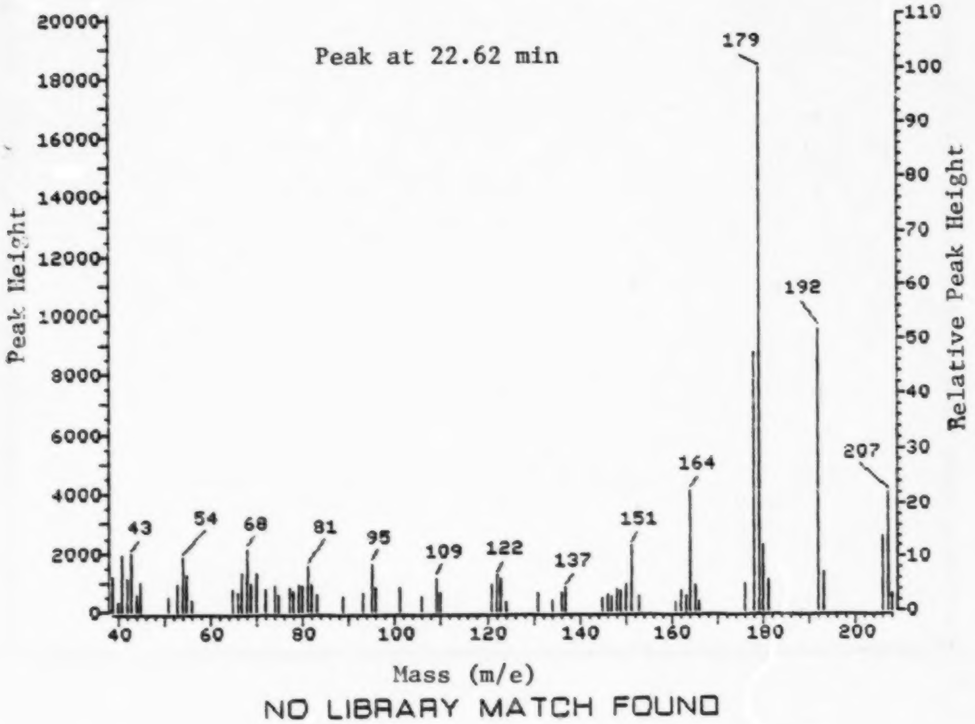


Figure F-20. Peak Mass Spectra of Peak at 22.62 minutes (Pilot Plant Effluent).

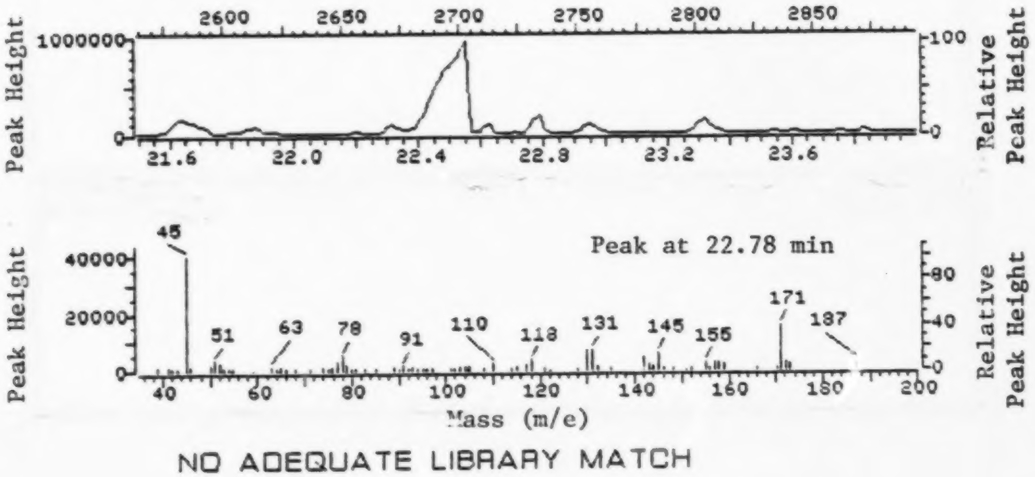


Figure F-21. Ion Chromatogram of Pilot Plant Effluent (21.6 to 24 min) and Peak Mass Spectra of Peak at 22.78 minutes.

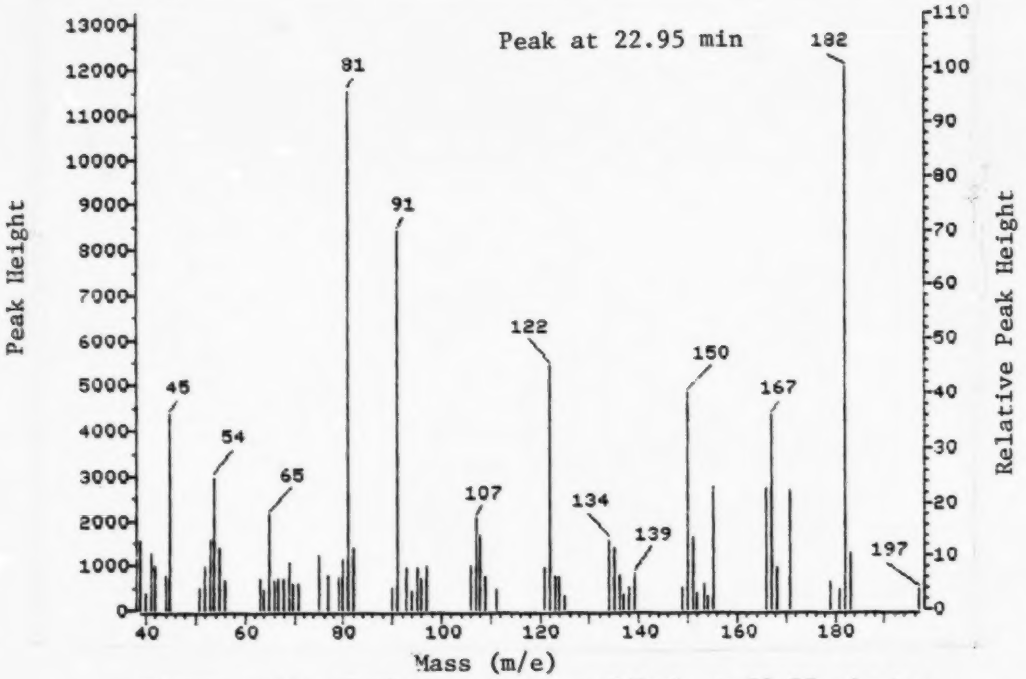


Figure F-22. Peak Mass Spectra of Peak at 22.95 minutes (Pilot Plant Effluent).

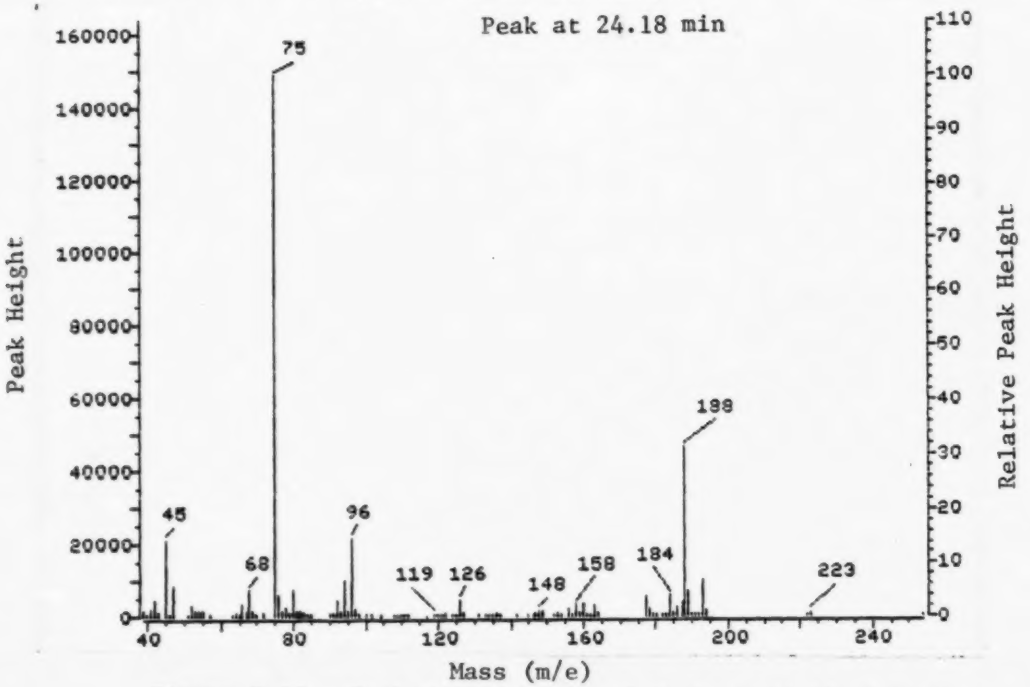


Figure F-23. Peak Mass Spectra of Peak at 24.18 minutes (Pilot Plant Effluent).

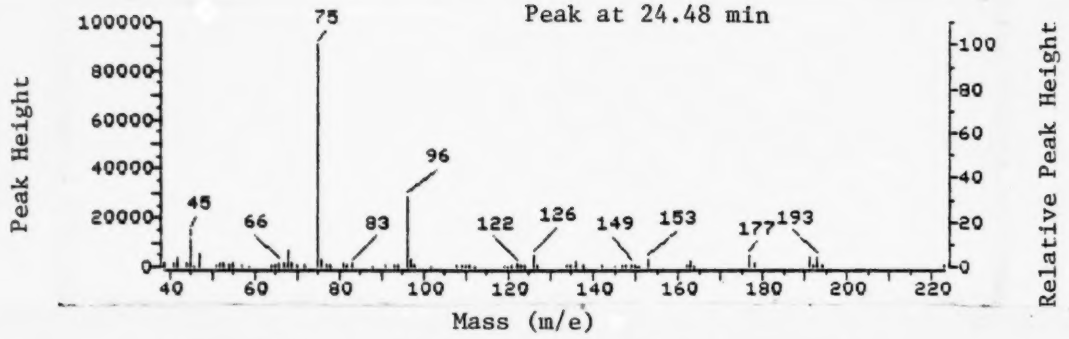


Figure F-24. Peak Mass Spectra of Peak at 24.48 minutes (Pilot Plant Effluent).

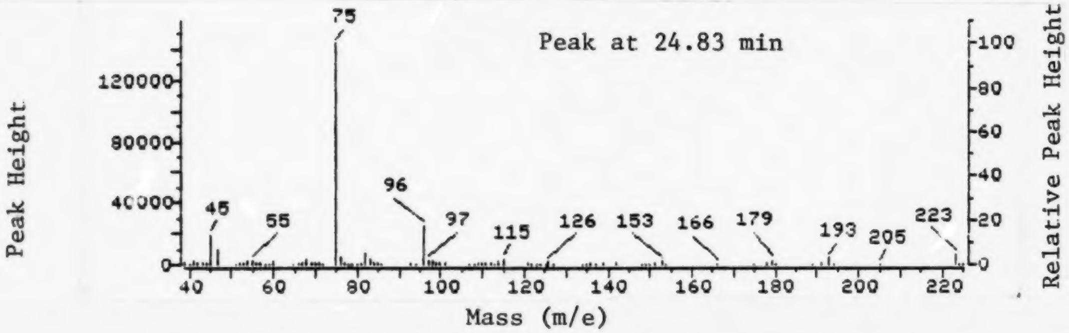


Figure F-25. Peak Mass Spectra of Peak at 24.83 minutes (Pilot Plant Effluent).

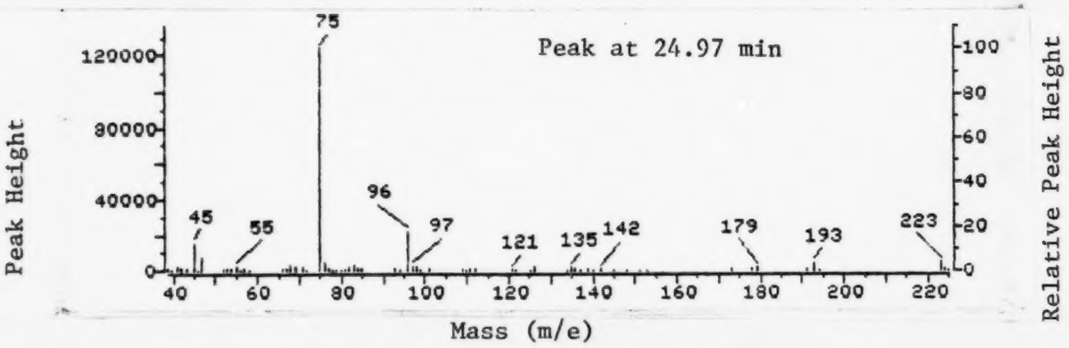


Figure F-26. Peak Mass Spectra of Peak at 24.97 minutes (Pilot Plant Effluent).

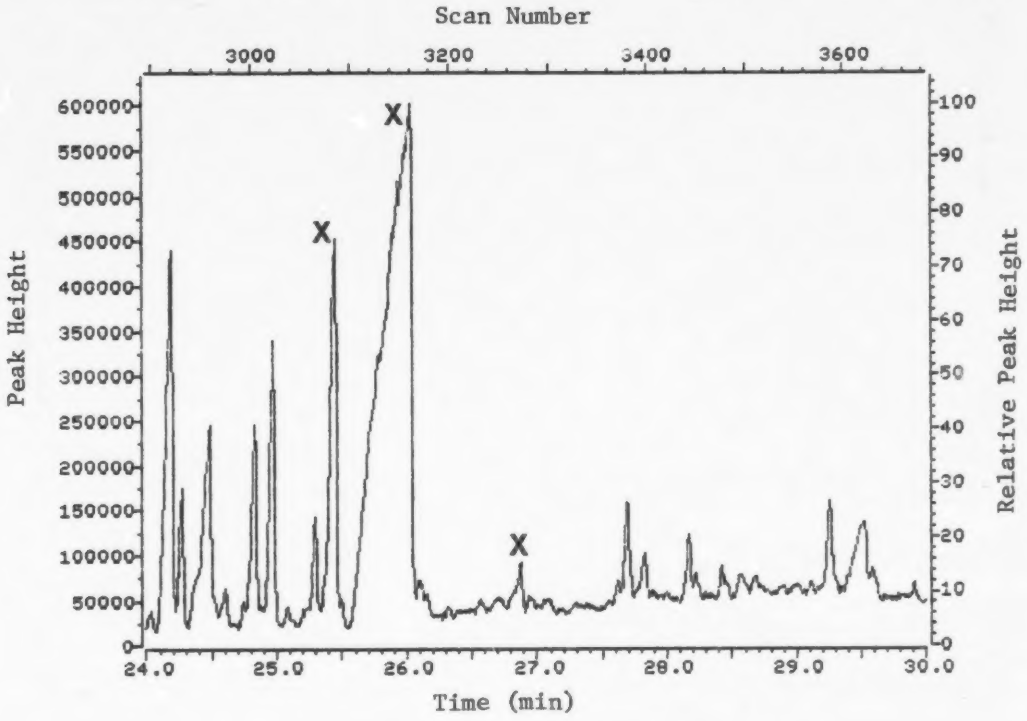


Figure F-27. Ion Chromatogram of Pilot Plant Effluent (24 to 30 min).

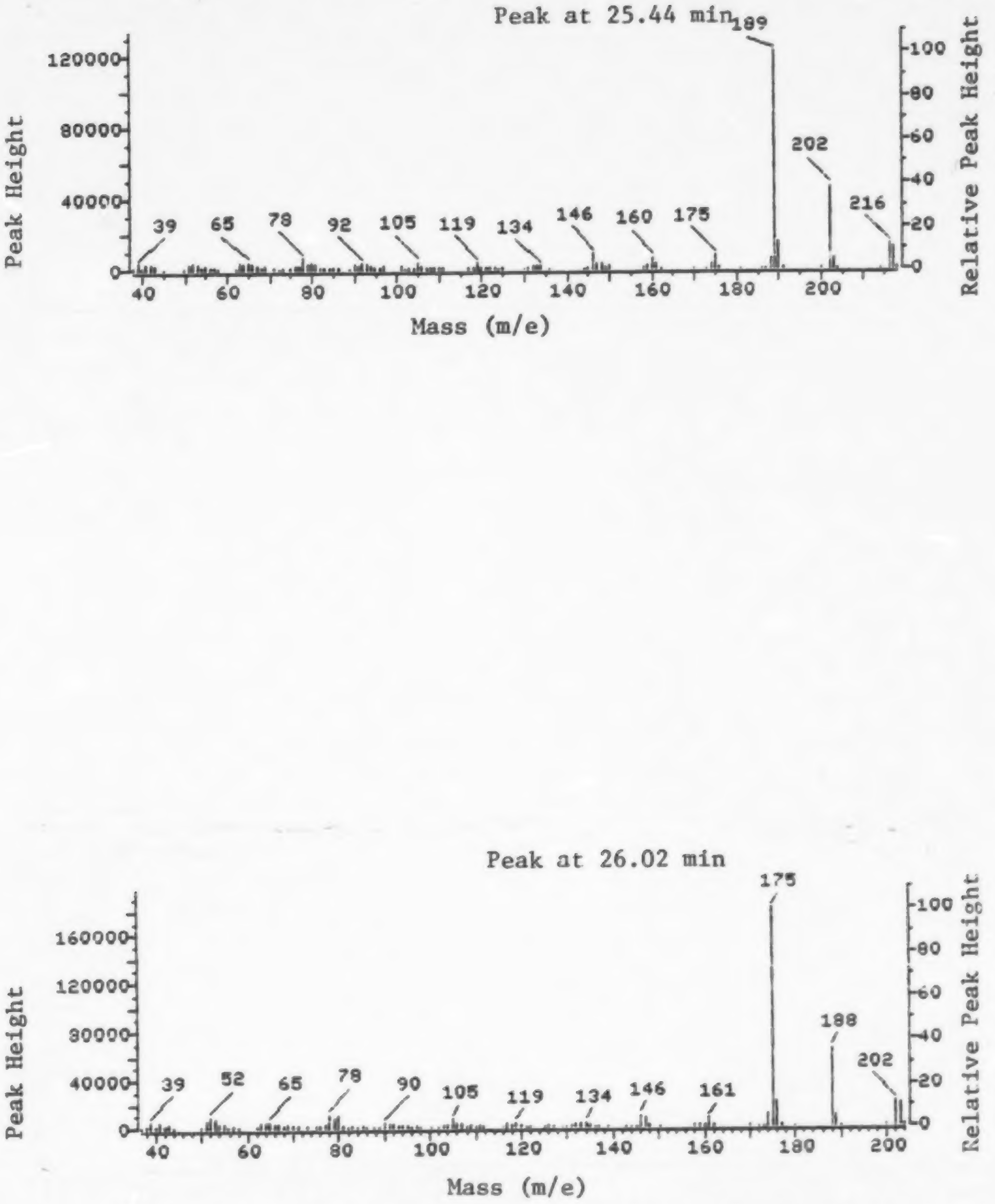


Figure F-28. Peak Mass Spectra of Peaks at 25.44 and 26.02 minutes (Pilot Plant Effluent).

SPECTRUM FROM EPA ATHENS

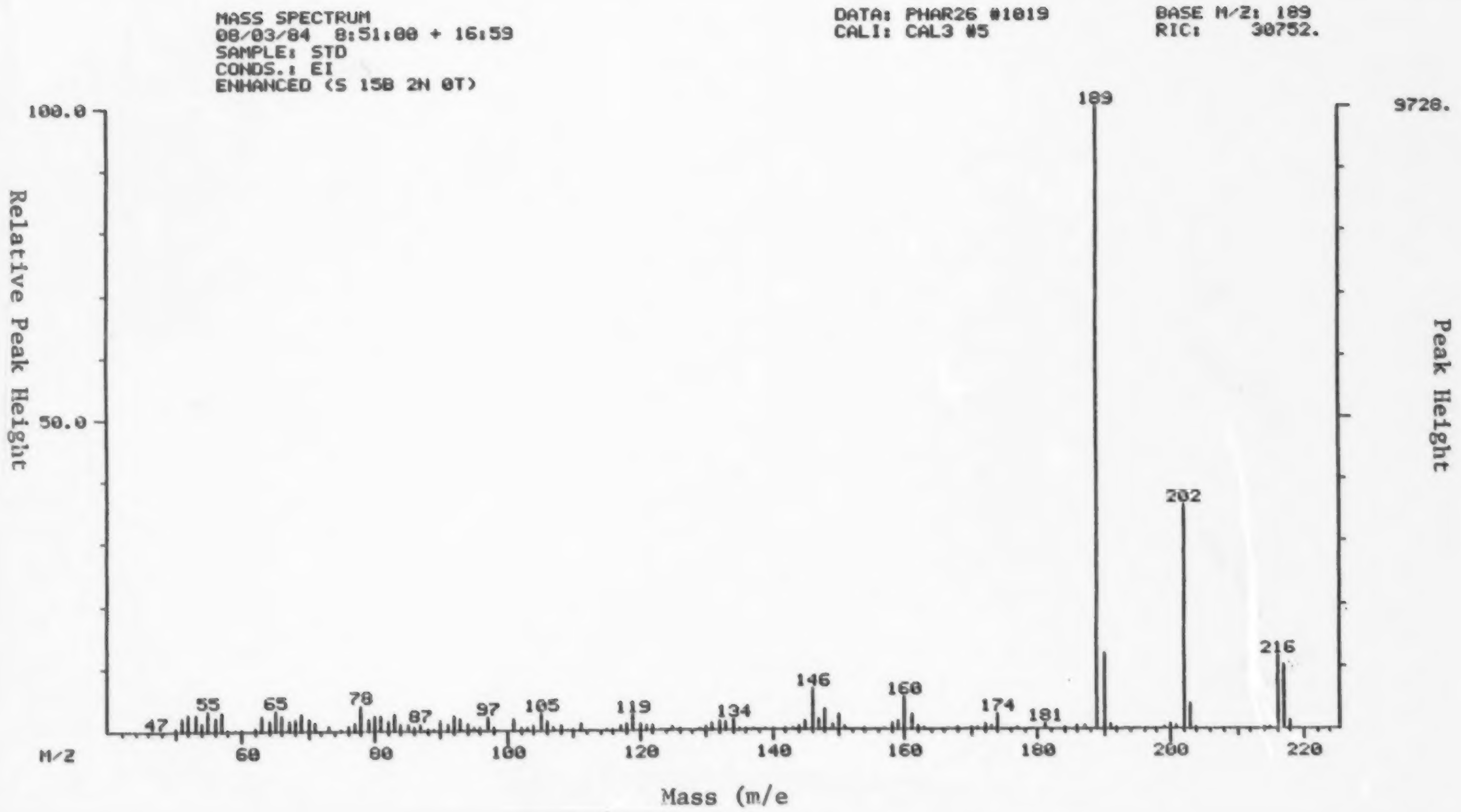


Figure F-29. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).

SPECTRUM FROM EPA ATHENS

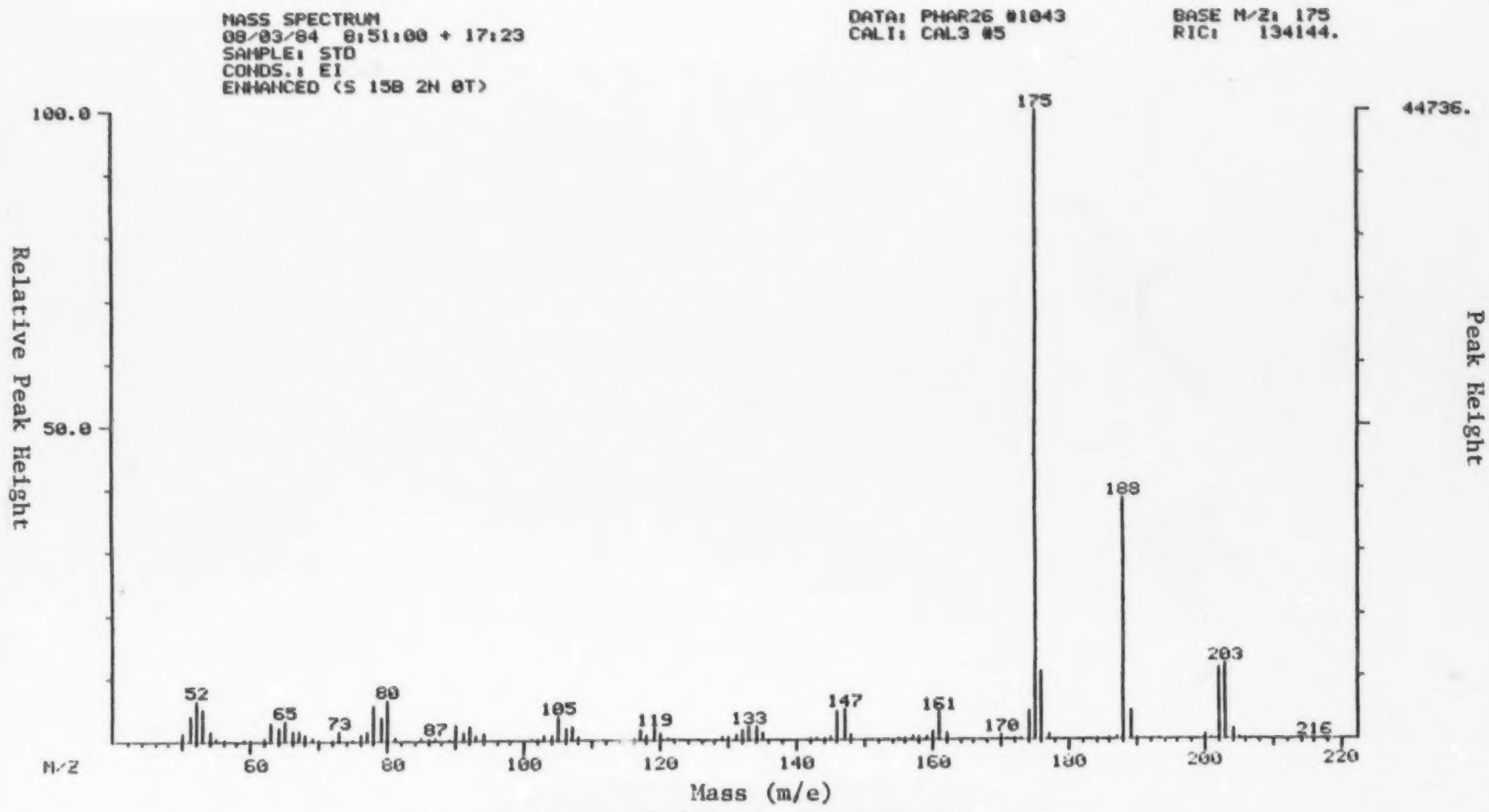


Figure F-30. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).

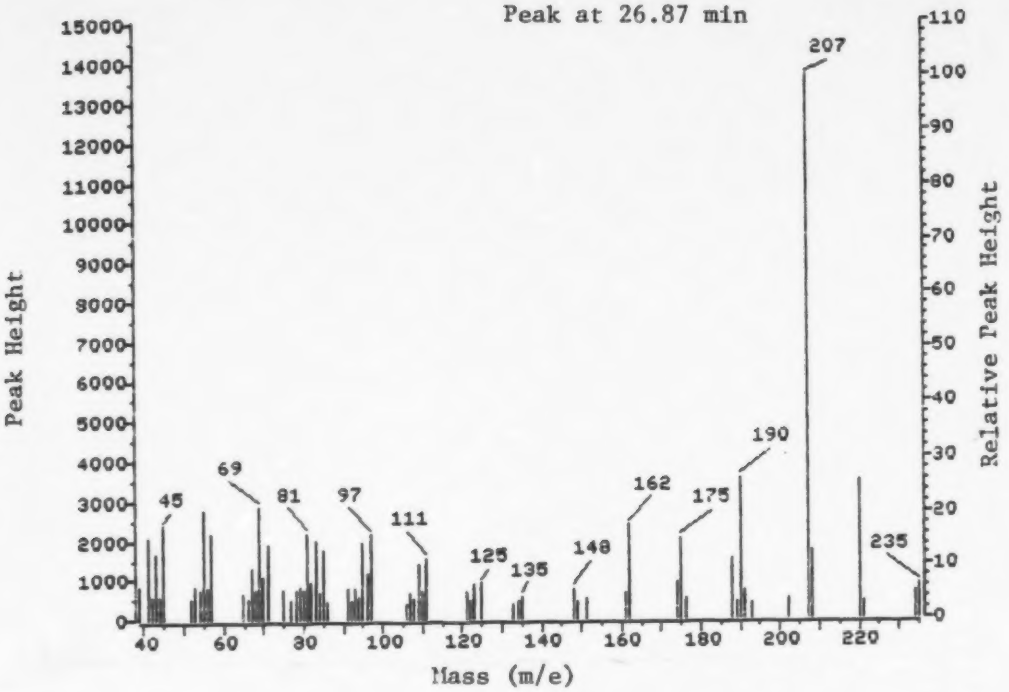


Figure F-31. Peak Mass Spectra of Peak at 26.87 minutes (Pilot Plant Effluent).

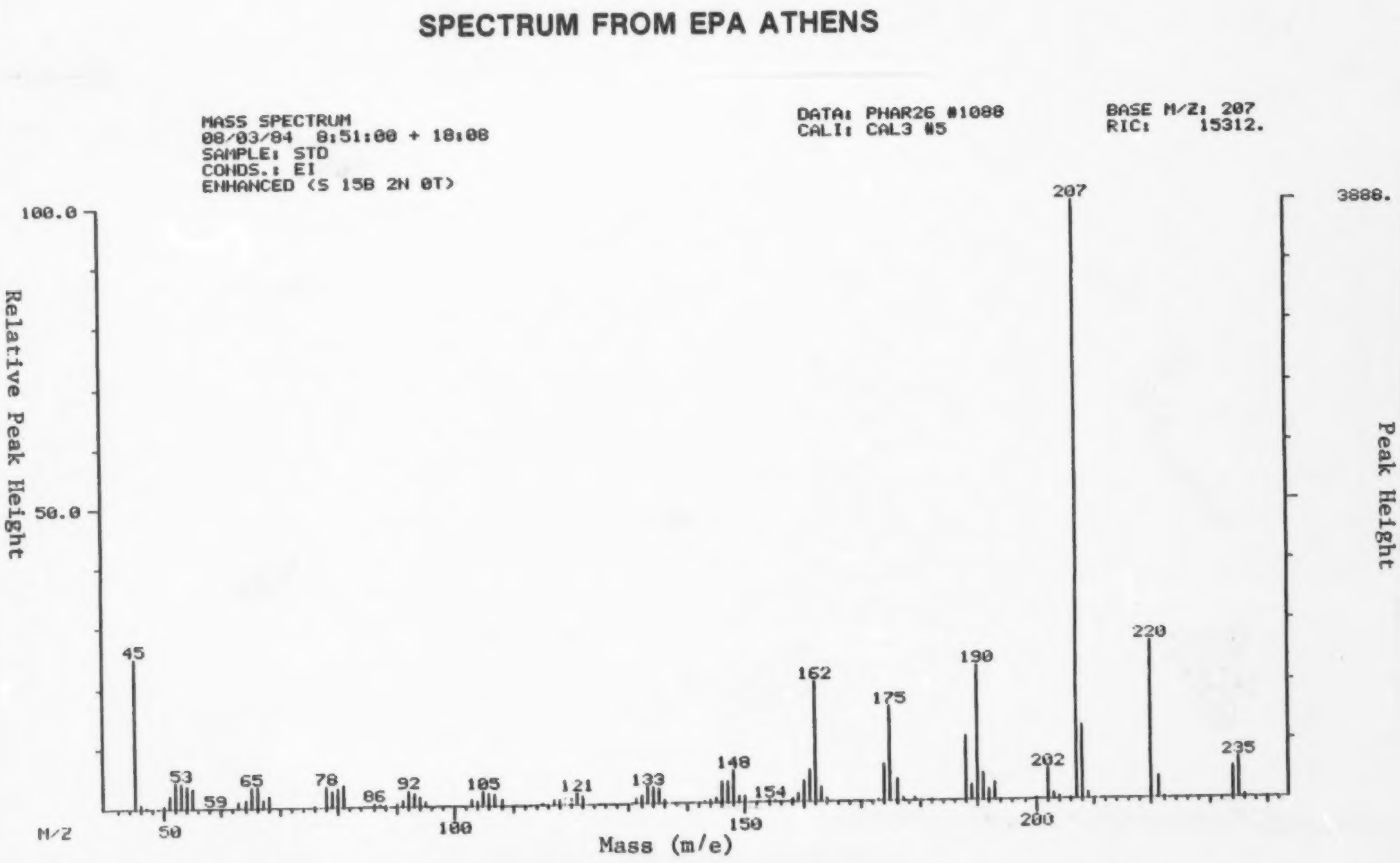


Figure F-32. Peak Mass Spectra from EPA Athens (Full-Scale Pilot Plant Effluent).

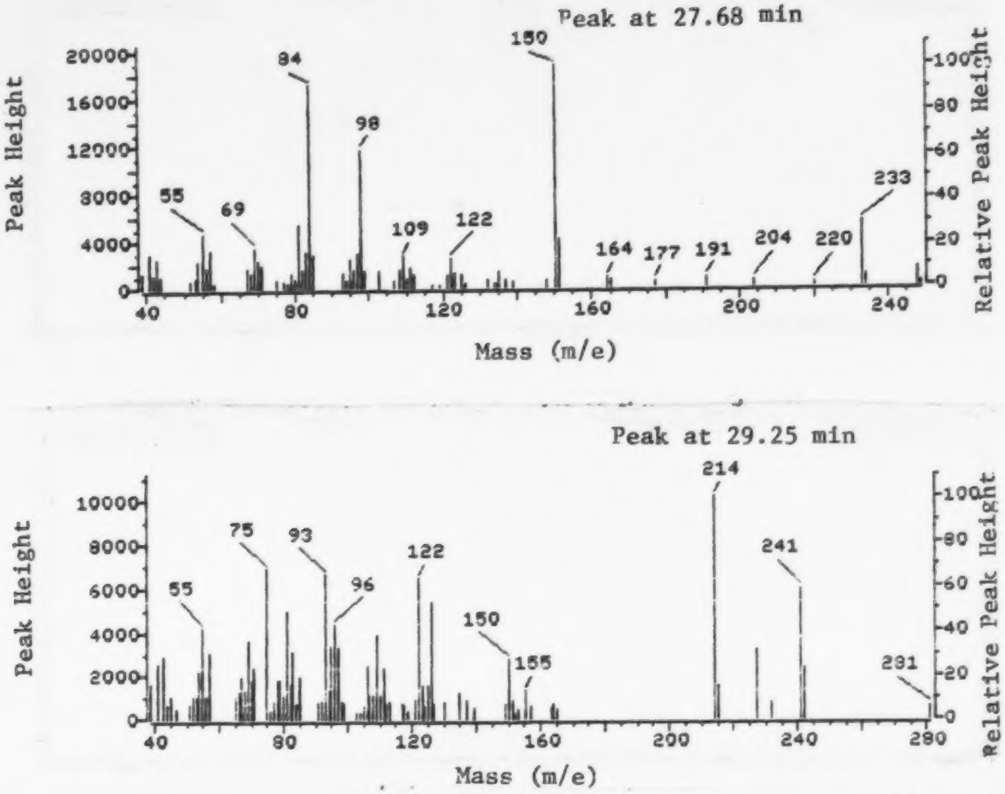


Figure F-33. Peak Mass Spectra of Peaks at 27.68 and 29.25 minutes (Pilot Plant Effluent).

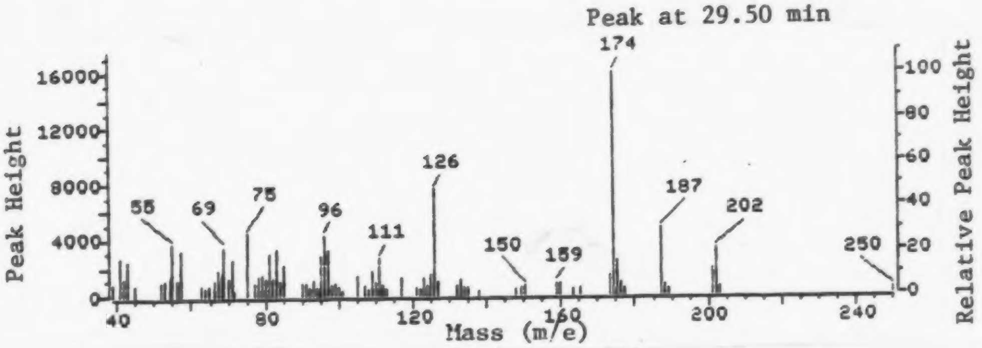


Figure F-34. Peak Mass Spectra of Peak at 29.50 minutes (Pilot Plant Effluent).

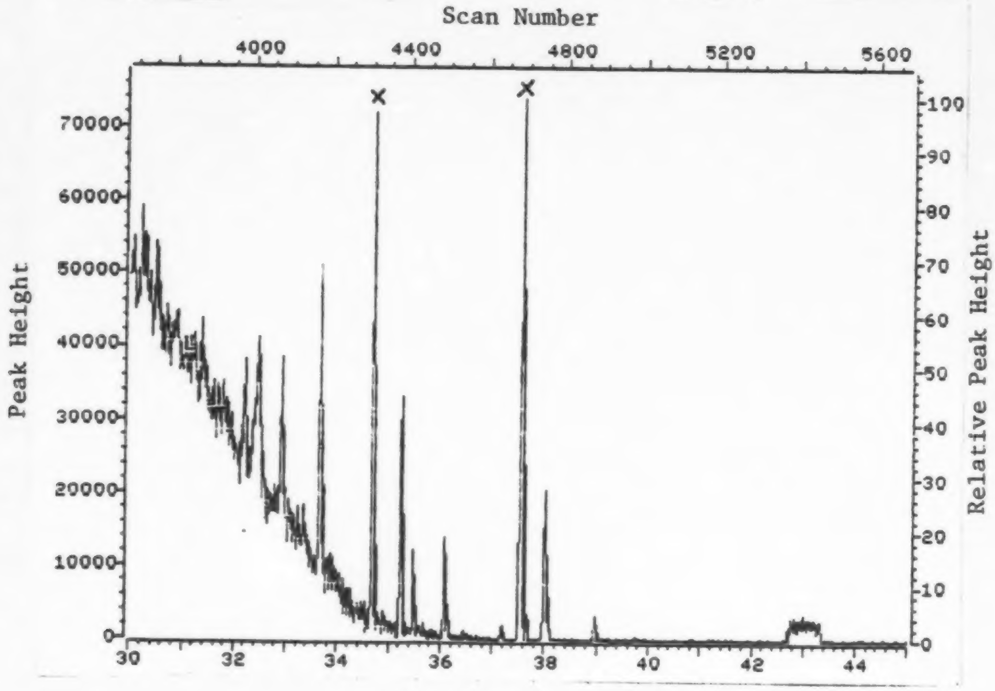


Figure F-35. Ion Chromatogram of Pilot Plant Effluent (30 to 45 min).

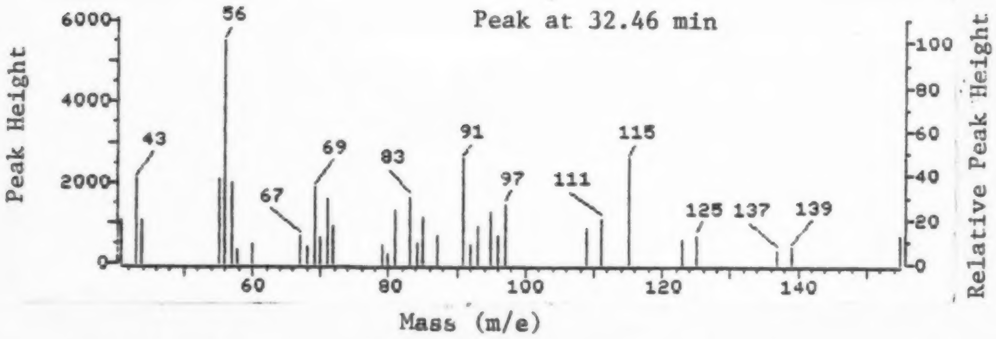


Figure F-36. Peak Mass Spectra of Peak at 32.46 minutes (Pilot Plant Effluent).

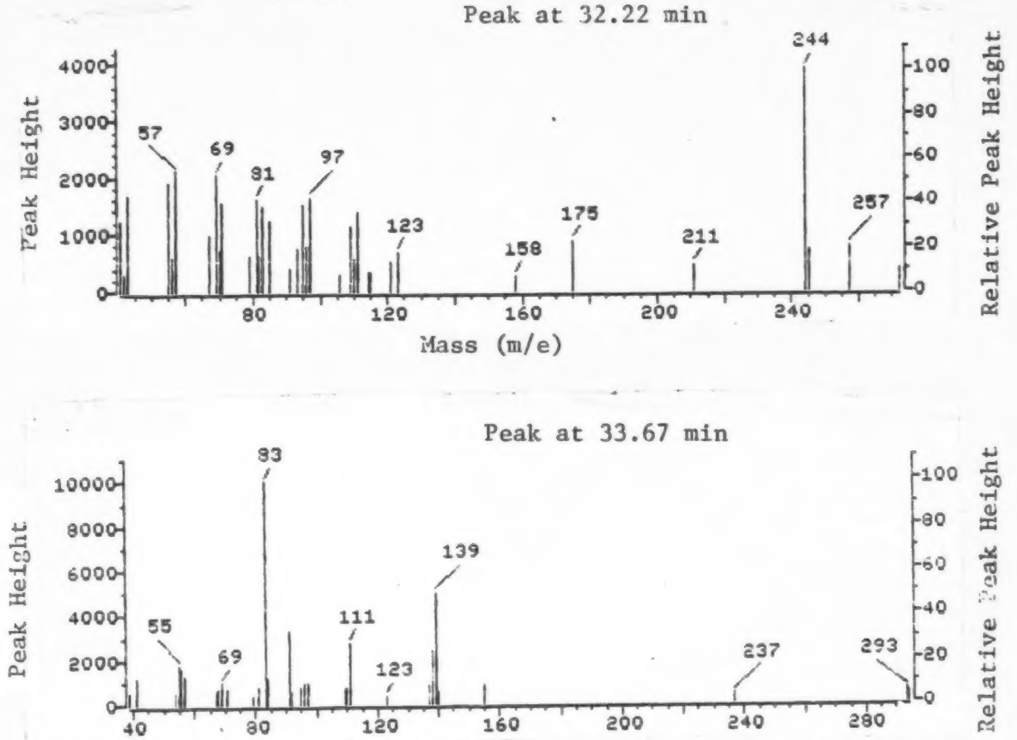


Figure F-37. Peak Mass Spectra of Peaks at 32.22 and 33.67 minutes (Pilot Plant Effluent).

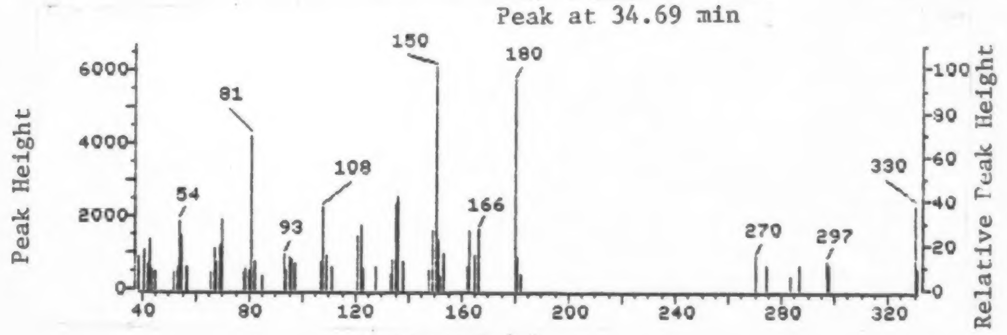


Figure F-38. Peak Mass Spectra of Peak at 34.69 minutes (Pilot Plant Effluent).

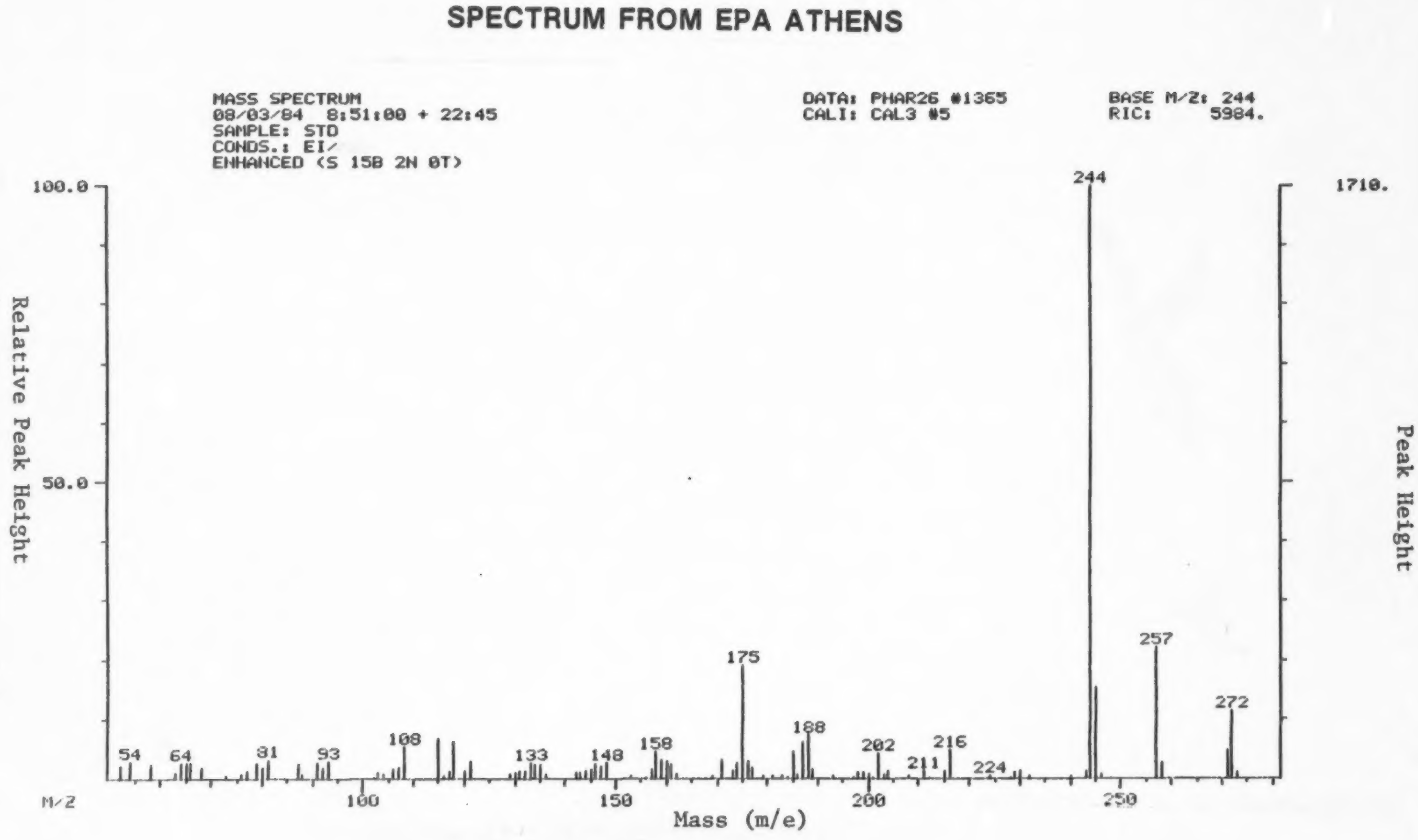


Figure F-39. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).

SPECTRUM FROM EPA ATHENS

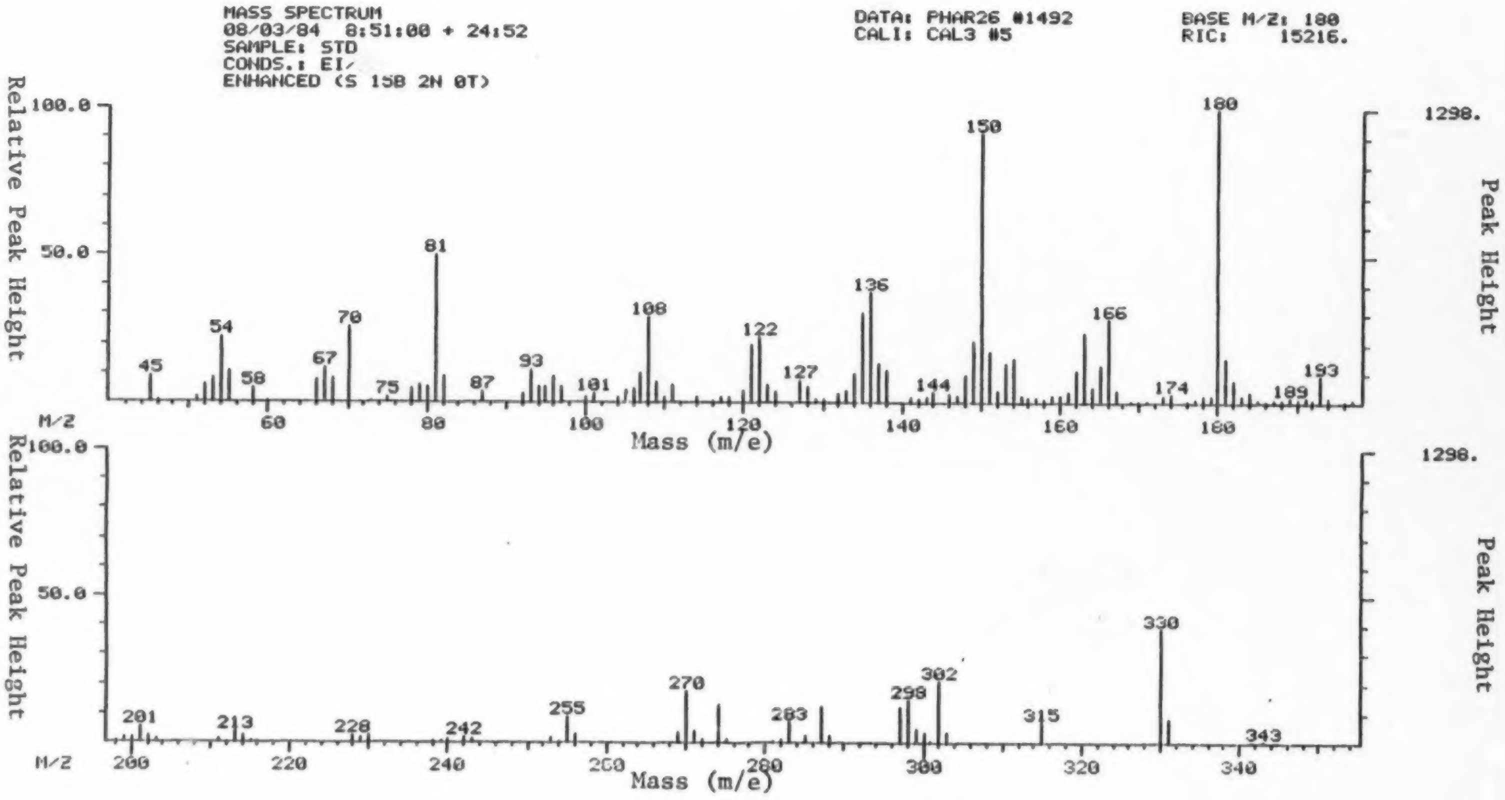


Figure F-40. Peak Mass Spectra from EPA Athens
(Full-Scale Plant Effluent).

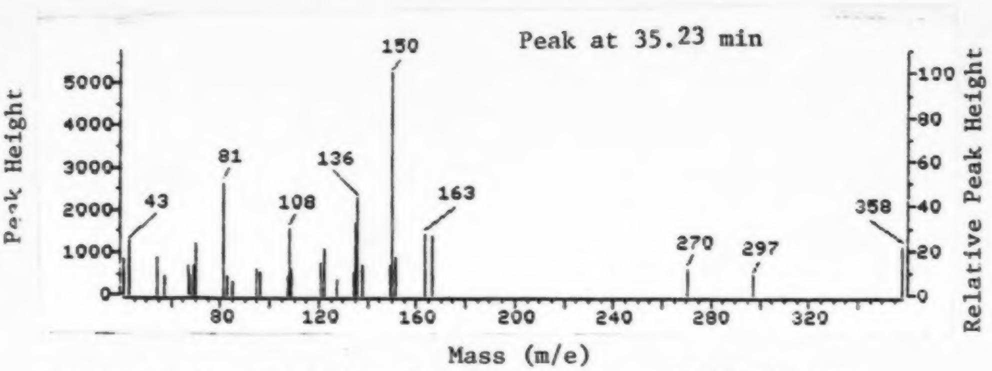


Figure F-41. Peak Mass Spectra of Peak at 35.23 minutes (Pilot Plant Effluent).

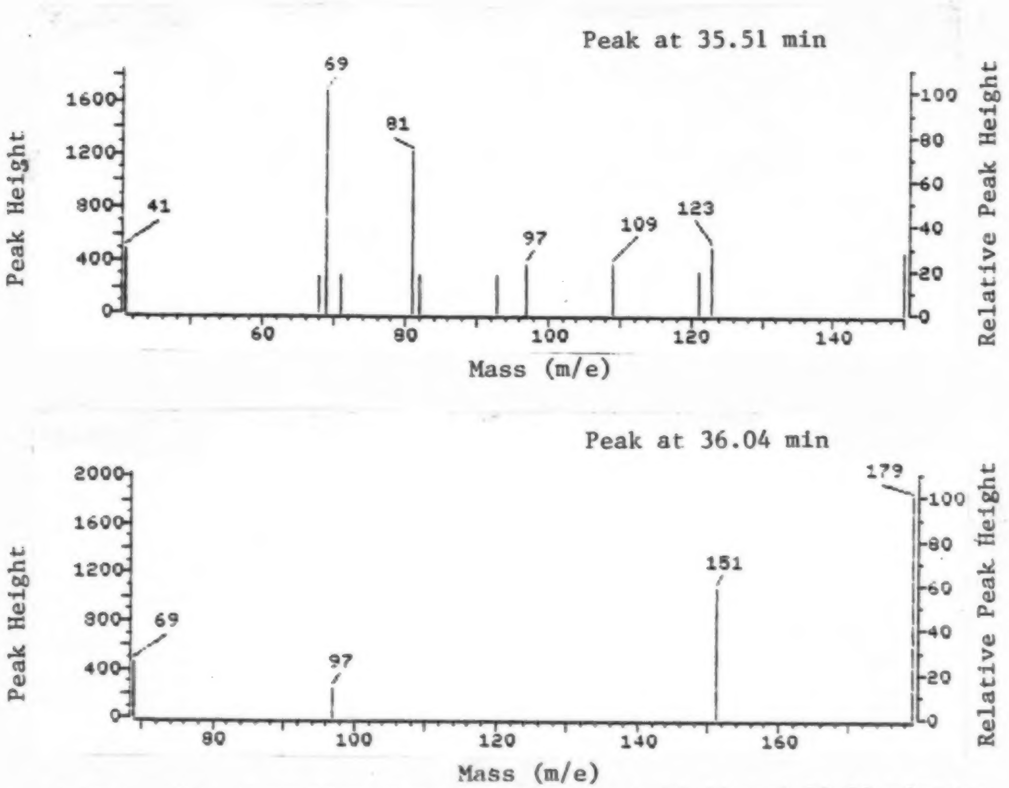


Figure F-42. Peak Mass Spectra of Peaks at 35.51 and 36.04 minutes (Pilot Plant Effluent).

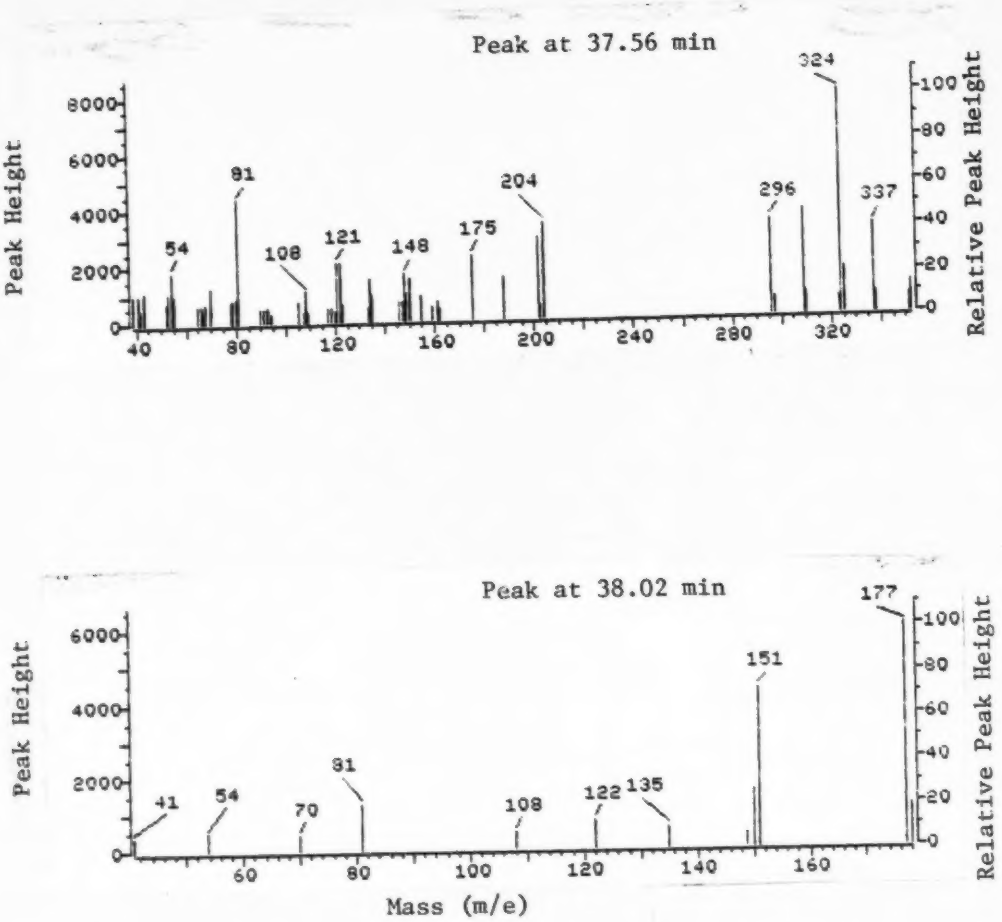


Figure F-43. Peak Mass Spectra of Peaks at 37.56 and 38.02 minutes (Pilot Plant Effluent).

SPECTRUM FROM EPA ATHENS

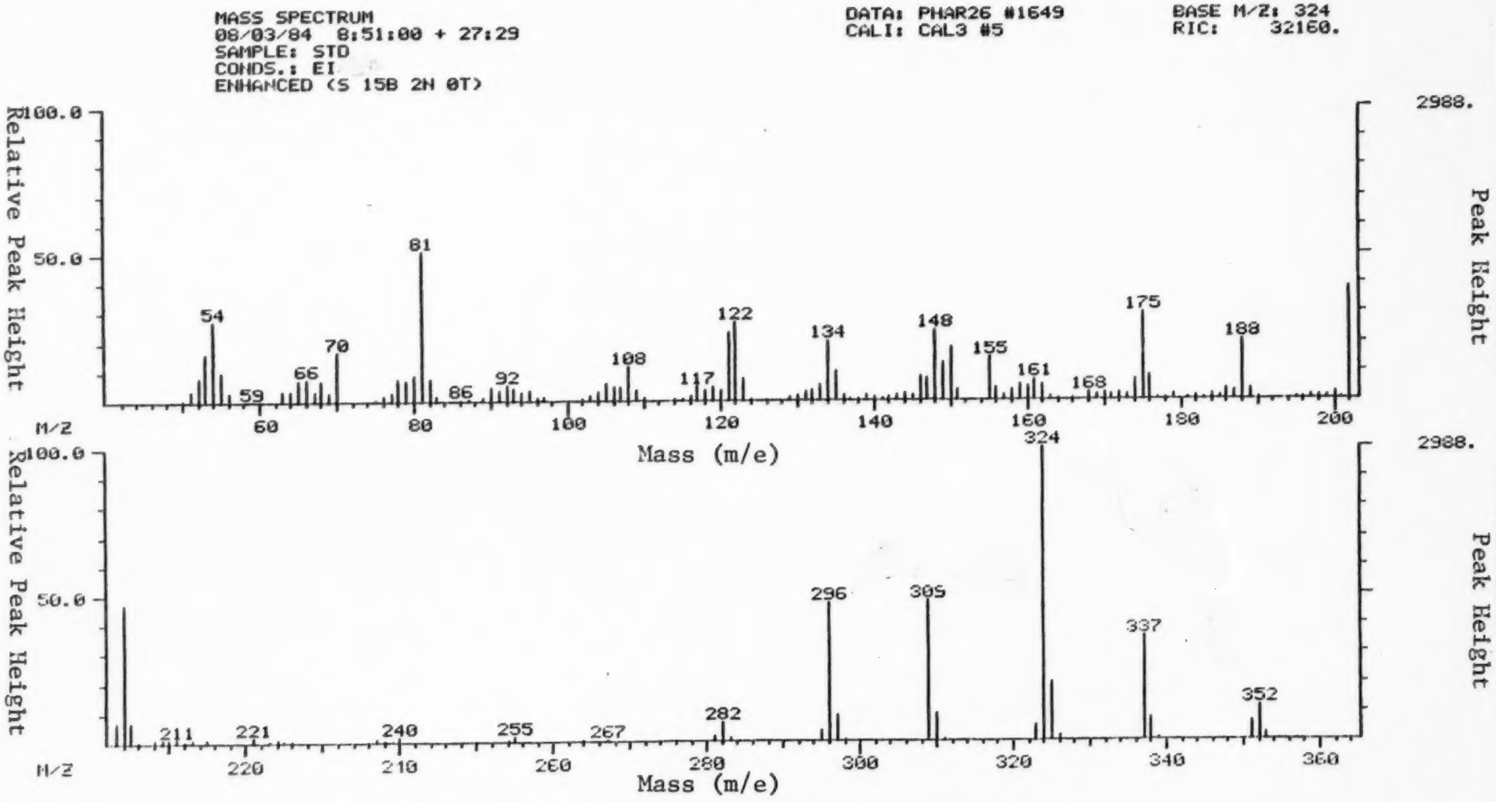


Figure F-44. Peak Mass Spectra from EPA Athens (Full-Scale Plant Effluent).